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RECENT PROGRESS IN THE SERUM DIAGNOSIS OF SYPHILIS *

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In reviewing the literature on the serum diagnosis of syphilis that has appeared since the last meeting of this Association, I have attempted to call attention to the progress that has been made during the year rather than to discuss at length the present status of our knowledge of the subject. The continued interest in the Wassermann reaction, and in various other serodiagnostic tests for syphilis, is shown by the large number of serious researches and clinical reports that have appeared during the past year. Four excellent books on the subject have been published in German, English and French. It was proper that the first of these should have been written by one of the discoverers of the Wassermann reaction, Carl Bruck,[1] whose personal experience with the test has been enormous. He has given a most excellent presentation of the whole subject from both the theoretical and practical standpoints. Noguchi[2] has also written a book of great value, in which special attention is devoted to his own modification. Interesting booklets have also been published by Gastou and Girauld[3] in France, and by Mulzer[4] in Germany.

VARIOUS SERODIAGNOSTIC TESTS

Before discussing the more important subject of the Wassermann reaction I should like to call attention to some of the serodiagnostic tests for syphilis, depending on principles other than those of complement-fixation. I had supposed that the status of the various precipitation tests for syphilis was fairly well settled at the last meeting of this association. In a paper read on that occasion Wieder and L'Engle,[5] from experiments with sodium taurocholate and glycocholate, lecithin, taurin and water, concluded that the proportion of positive results in non-syphilitics was too high to make the test of value. This seemed to be the prevailing opinion last year and is, I think, at present, in spite of two recent reports on the subject. Rosenfeld and Tannhauser,[6] in a series of 131 cases, obtained results that compared favorably with those of the Wassermann test. Tanton and Combe,[7] from an examination of sixteen cases, concluded that the precipitation method was equally specific, in addition to being much simpler than the Wassermann reaction. Sourd and Pagniez,[8] however, found that the precipitation test gave six positive reactions in non-syphilitic cases, and Paris and Sabaréanu,[9] from an examination of fifty-three cases, conclude that the test is of no diagnostic value whatever. A similar opinion is expressed by Laub and Novotny[10] in regard to the value of the reaction for pathologic-anatomic diagnosis, their experiments including a simultaneous test of ninety-eight cadaver serums. Unfavorable results are also reported by Minelli and Gavazzeni.[11] In all of the above communications the test with glycocholate of soda was the one employed.

Since the publication of Noguchi and Moore[12] last July on the butyric acid test in the metasyphilitic and nervous diseases, nothing further has been written on this method. In their experiments the writers found that the test was not absolutely specific, positive reactions having been obtained in two out of thirty-seven psychoses not in any way related to syphilis. In his book on serum diagnosis Noguchi states that the butyric acid test while not entirely specific, is at times more valuable than the Wassermann reaction in excluding syphilis, for instance, when the reaction is negative.

Assuming that the modus operandi of the Wassermann reaction depends on a precipitation, Jacobsthal[13] suggests a method which he terms the "optic serodiagnosis of syphilis." The patient's serum is mixed with alcoholic extract of syphilitic liver in the proportion of 1 to 10 and the resulting precipitate is examined with the dark-field illuminator. A strong positive reaction appears as a clumpy precipitate, a weak positive reaction as a small conglomeration of little fat particles, while a negative is shown as a thick emulsion of very fine dancing fat particles. In comparing his method with the Wassermann reaction Jacobsthal claims that, after having acquired the necessary experience, his results with the two tests were identical.

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* Read in the Section on Dermatology of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

* Because of the space required, this article is abbreviated in THE JOURNAL, but it appears in full in the Transactions of the Section and in the author's reprints.

1. Bruck, C.: Die Serodiagnose der Syphilis, Julius Springer, Berlin, 1909.
2. Noguchi, H.: Serum Diagnosis of Syphilis, and the Butyric Acid Test for Syphilis, J. B. Lippincott, New York, 1909.
3. Gastou, P., and Girauld, A.: Guide pratique du diagnostic de la syphilis, J. B. Baillière et Fils, Paris, 1910.
4. Mulzer, P.: Praktische Anleitung zur Syphilisdiagnose auf biologischem Wege, Julius Springer, Berlin, 1910.
5. Wieder, H. S., and L'Engle, E. M.: Some Studies of the Precipitation Test for Syphilis, THE JOURNAL A. M. A., Nov. 6, 1909, p. 1535.
6. Rosenfeld, F., and Tannhauser: Die Serodiagnose der Lues mittels Ausflockung durch glykocholsaures Natrium, Deutsch. med. Wchnschr., 1910, xxxvi, 165.
7. Tanton and Combe, E.: Le séro-diagnostic de la syphilis par la méthode de Porges, Compt. rend. Soc. de biol., 1910, lxviii, 436.
8. Le Sourd, L., and Pagniez, P.: La réaction précipitante du sérum syphilitique vis-à-vis des solutions de glycocholate de soude, Compt. rend. Soc. de biol., 1909, lxvii, 84.
9. Paris, A., and Sabaréanu: La séro-précipitation chez les syphilitiques par le glycocholate de soude, Compt. rend. Soc. de biol., 1910, lxviii, 290.
10. Laub, M., and Novotny, J.: Ueber die Brauchbarkeit der Porgesschen Ausflockungsreaktion fur die Diagnose der Lues an Leichen, Ztsch. f. Immunitätsforsch., 1909, iii, 394.
11. Minelli, S., and Gavazzeni, G. A.: Il metodo di Porges nella sierodiagnosi della sifilide, Gazz. med. ital., 1909, lx, 191.
12. Noguchi, H., and Moore, J. W.: The Butyric Acid Test for Syphilis in the Diagnosis of Metasyphilitic and Other Nervous Diseases, Jour. Exper. Med., 1909, xi, 605.
13. Jacobsthal, E.: Die optische Serodiagnose der Syphilis, München. med. Wchnschr., 1909, lvi, 2607.

It can hardly be of more than historical interest to discuss the color reaction suggested by Schürmann,[14] that has been so thoroughly discredited by subsequent experimentation. Indeed, it seems strange that so much has been written on the subject when it seemed almost from the start that the method was valueless. A few words about this proposed method may aid in preventing others from further experimentation. Schürmann thought that there might possibly be some substance in the blood of syphilitics whose presence could be recognized by a color reaction. It occurred to him that lactic acid might play a part in the reaction, as this substance had been present in one of his most reliable extracts. His first experience with Uffelmann's reagent being unsuccessful, he was led to use perhydrol in combination with phenol and chlorid of iron. According to Schürmann, when the reagents were mixed with normal serum a light green color appeared at the upper portion of the mixture. This either disappeared or changed to a light green tint on shaking, the solution remaining clear. When syphilitic serum was used a blackish-brown dull tint appeared almost immediately, the solution giving the impression of a thick mixture.

Employing his method in eighty-four cases simultaneously with the Wassermann test, Schürmann claimed to have obtained identical results. In a comparison of the Schürmann with the Wassermann test in 154 cases of undoubted syphilis Meirowsky[15] obtained 62.3 per cent. of positive reactions for the Wassermann test as opposed to 14.9 per cent. for the Schürmann method. The list of investigators whose results have been unfavorable, and who conclude that the test is of no clinical value, includes Biach,[16] Bonola,[17] Braunstein,[18] Bruck,[1] Galambos,[19] Roth and Goldner,[20] Schminke and Stoeber,[21] C. Stern,[22] Stühmer,[23] Symanski, Hirschbruch and Gardiewski.[24] According to the chemical examination of Braunstein,[18] the reaction is a process of oxidation, the perhydrol oxidizing the phenol by means of the iron chlorid.

Interesting results have been obtained by Nicolas, Favre and Gautier[25] with dermic and intradermic reactions in syphilis, analogous to the reaction caused by tuberculin for the diagnosis of tuberculosis. For this purpose the experimenters used a concentrated glycerinated extract of liver of syphilitic fetus which they termed "syphiline." When this extract was used by the dermic method (as in the von Pirquet test), no change was noted. When, however, the extract was injected intradermically a reaction consisting of redness and nodular infiltration was obtained in a large proportion of the twelve cases examined. In a second contribution the same authors[26] give the results in fifty cases, of a comparison of their test with the Wassermann reaction. The results were in agreement in forty-two cases. Of the remaining eight cases five seemed to favor the correctness of the diagnosis by the intradermic test, while one favored the Wassermann method.

The relation of the Wassermann test to the antitryptic power of the blood in syphilis was studied by Fuerstenberg and Trebing.[27] The determination of the antitryptic index (using a modified method of Müller and Jochman) was made simultaneously with the Wassermann method in sixty-one cases of syphilis and other diseases. It was found that in cases of undoubted syphilis giving a positive reaction the antitryptic titer or index was never increased. In the majority of cases it was diminished. Whether this test will prove of value, from the fact that an increased antitryptic titer would seem to exclude syphilis, can be judged only after further investigation with this method.

According to Achard, Benard and Gagneux,[28] the so-called leukodiagnosis, which is based on specific sensitiveness of leukocytes *in vitro* to certain normal or pathologic products, may also be applied to syphilis. The specific principle used by these writers was a glycerinated extract of spleen of a congenitally syphilitic infant containing *Spirochæta pallida*. The strongest influence on the leukocytes was obtained with a 5 per cent. dilution of the extract. In this strength the leukocytic activity was found to be more or less increased in syphilis, while it was not at all influenced in healthy subjects. It was found in their investigations that the strongest reactions correspond to the period of early secondary syphilis, while the reactions were weaker in hereditary manifestations of the disease and in tabes and paresis.

The reaction first described by Much and Holzmann was tried by Hamburger[29] in twenty-two cases of syphilis simultaneously with the Wassermann test. The results obtained were entirely contradictory, the writer concluding that the test has no value in syphilis. The reaction which has previously been seen only in certain insane persons, especially dementia præcox, consists in an inhibitory action to the hemolysing power of cobra venom.

In experimenting with various hemolysing agents in different diseases it was found by Richard Weil[30] that the erythrocytes of syphilitics were especially resistant to the hemolysing power of cobra venom. This fact has been utilized as the basis of a diagnostic test for syphilis that promises to be of considerable value. The technic of the procedure is as follows: Blood is drawn into a 2 per cent. solution of sodium citrate, washed and made into a 4 per cent. suspension in normal salt solution. It is then tested on the following day. Equal amounts of venom at 1 to 800 and 1 to 1,500 are added and after one hour of incubation the results are read. It has been

14. Schürmann, W.: Luesnachweis durch Farbenreaktion, Deutsch. med. Wchnschr., 1909, xxxv, 616.
15. Meirowsky, E.: Die Schürmannsche Methode des Luesnachweises mittels Farbenreaktion, Deutsch. med. Wchnschr., 1909, xxxv, 937.
16. Biach, M.: Ueber Luesnachweis durch Farbenreaktion, Wien. klin. Wchnschr., 1909, xxii, 606.
17. Bonola, F.: Sulla reazione cromatica di Schürmann per la sierodiagnosi della sifilide, Riforma med., 1909, xxv, 682.
18. Braunstein, A.: Ueber die Schürmannsche Farbenreaktion bei Lues, Ztschr. f. klin. med., 1909, lxviii, 345.
19. Galambos, A.: Ueber den Wert der Farbenreaktion bei Lues, Deutsch. med. Wchnschr., 1909, xxxv, 976.
20. Roth, A., and Goldner, V.: Ueber die Farbenreaktion bei Lues, Orvosi hetil., 1909, No. 19. (Review in Monatsh. f. prakt. Dermat., 1909, l, 129.)
21. Schminke and Stoeber: Zur Kritik der Schürmannschen Farbenreaktion bei Lues, Deutsch. med. Wchnschr., 1909, xxxv, 937.
22. Stern, C.: Ueber die Bewertung einer Serum-Farbenreaktion zum Luesnachweis, Berl. klin. Wchnschr., 1909, xlvi, 1068.
23. Stühmer, A.: Luesnachweis durch Farbenreaktion, Fortsch. d. Med., 1909, xxvii, 714.
24. Symanski, Hirschbruch and Gardiewski: Luesnachweis durch Farbenreaktion, Berl. klin. Wchnschr., 1909, xlvi, 874.
25. Nicolas, J., Favre, M., and Gautier, C.: Intradermoréaction et cutiréaction avec la syphiline chez les syphilitiques, Compt. rend. Soc. de biol., 1910, lxviii, 257.
26. Nicolas, J., Favre, M., and Charlet, L.: Comparaison des résultats fournis par l'intradermo-réaction à la syphiline et par la séro-réaction de Wassermann, Bull. et mém. Soc. méd. d. hôp. de Paris, 1910, xxvii, 440.
27. Fuerstenberg, A., and Trebing, J.: Die Lueareaktion in ihren Beziehungen zur antitryptischen Kraft des menschlichen Blutes, Berl. klin. Wchnschr., 1909, xlvi, 1357.
28. Achard, C., Benard, H., and Gagneux, C.: Leuco-Diagnostic de la Syphilis, Compt. rend. Soc. de biol., 1910, lxviii, 323.
29. Hamburger, J.: Ueber die Beeinflussung der Kobra-Gift-Hämolyse durch Seren von Haut- und Geschlechtskrankheiten, Dermat. Ztschr., 1909, xvi, 785.
30. Weil, R.: The Resistance of Human Erythrocytes to Cobra Venom, Jour. Infect. Dis., 1909, vi, 688; The Variation in the Resistance of Human Erythrocytes in Disease to Hemolysins, with Especial Reference to Syphilis, Proc. Soc. Exper. Biol. and Med. 1910, vii, 2.

found that syphilitic cells resist a solution of 1 to 1,800; that is, twice as strong as that which destroys the control. The reaction was found to be marked in 90 per cent. of the cases of syphilis, the percentage of positive reactions being smaller in tabes than in paresis. In several non-syphilitic affections in which the Wassermann test was positive (three cases of scarlatina, two cases of polycythemia and one case of scleroderma) the Weil test showed a negative reaction. Some advantages which Weil claims for his test are that it can be used in cases of jaundice. It is positive for some time after mercurial treatment has abolished the Wassermann reaction. It is finally positive in a very large percentage of old quiescent cases in which the Wassermann test is negative. Dr. Weil informs me in a personal communication that he considers his test too delicate for general use, as a very considerable amount of practice is required in order to interpret the results obtained.

The meiostagmin reaction suggested by Ascoli and used by him as a diagnostic procedure in typhoid fever has been applied by Izar[31] to syphilis. The test is a physico-chemical reaction of immunity depending on a change in surface tension of the fluids employed. When the serum of a syphilitic is mixed with its corresponding antigen and placed in the thermostat for two hours there is a diminution in surface tension as shown by an increase in the number of drops of a measured amount of the fluids. According to Izar the test was found to be entirely specific. A positive reaction was obtained in twelve cases of syphilis, while all of the non-syphilitic cases gave negative results, including two cases of leprosy in which the Wassermann reaction had been positive.

WASSERMANN TEST AND ITS MODIFICATIONS

In reviewing the recent progress of the Wassermann reaction I should first like to discuss some of the more important and practical contributions that relate to the technic of the method. A simple means of obtaining the patient's blood for examination has been suggested by Muck.[32] The superficial veins of the neck are compressed by Bier's method and the mucous membrane of the anterior portion of the septum is scratched with a small needle or knife. In about three minutes as much as 20 c.c. of blood can be readily secured. The bleeding stops on removal of the compression, or on introduction of a pledget of cotton into the nose. Another method of obtaining blood where a venepuncture is difficult or not desirable, as in infants, is suggested by Somani.[33] After scarifying the skin he applies a cupping apparatus with an outlet below attached to a test-tube to receive the blood, and a suction-pump attached in the center. To this and other cupping methods Mulzer makes the objection that the apparatus is difficult to sterilize and that unsightly scars are left which if the method were widely adopted and known to the laity might at times prove compromising.

Finkelstein[34] has devised an apparatus for determining quantitatively the strength of a positive reaction. He uses a glass funnel (of a shape to fit a centrifuge), at the bottom of which a graduated tube is fused. The undissolved corpuscles of the case to be examined and of the known positive cases are poured into two separate funnels, which are then centrifugalized and the result mathematicaly read. A somewhat similar apparatus has been recently suggested by Heimann.[35]

As yet no one has produced the much-desired artificial antigen which shall prove as reliable and specific as the various organ extracts now in use. The artificial antigen of Sachs and Rondoni has, however, been found in the hands of Eisenberg and Nitsch[36] to be the equal of organ extracts, while unfavorable results in its use were obtained by Isabolinsky.[37] An artificial antigen has been suggested by Schürmann[38] which, in addition to lecithin, contains glycerophosphate of sodium and ammonium vanadinate. This has been tested by Rajchman and Zygmunt[39] with disappointing results. They conclude that artificially prepared antigens are not reliable substitutes for alcoholic organ extracts, as in weak doses they often fail to give positive reactions with syphilitic serums and in stronger doses give a positive reaction with normal serums.

It was recently pointed out by Wechselmann[40] that the failure to obtain higher percentages by positive reactions in cases of undoubted syphilis might be due to interference from the presence of complementoids. By removing these disturbing bodies, by shaking the serum with barium sulphate, better results were obtained than with the regular Wassermann method. This procedure has been tried by Lange[41] with strikingly good results in a series of 800 cases, in which both methods were simultaneously performed. In 551 syphilitic serums the Wechselmann test yielded 85 per cent. of positive reactions, as against 77 per cent. for the Wassermann method. In non-syphilitic control cases the Wechselmann test gave only negative reactions. Shaking the serum with barium sulphate not only adds to the delicacy of the test, but also destroys the complement, making it unnecessary to inactivate the patient's serum by heating to 56 C. for a half hour. Lange, therefore, at the present time uses the barium sulphate treatment of the serum as a substitute for inactivation by heat.

In order that positive and negative control serums may always be at hand Hecht[42] recommended that they be preserved by means of drying. Small amounts, such as 0.5 c.c., are dried in watch crystals. When the serum is needed it is dissolved in an equal amount of salt solution, after which equal amounts of distilled water are added. The combination of salt solution and water is advised, as when distilled water is added to the dried serum certain substances (possibly globulins) remain undissolved and float about in the mixture as cloudy masses.

31. Izar, G.: Ueber eine spezifische Eigenschaft luetischer Blutsera, München. med. Wchnschr., 1910, lvii, 182.
32. Muck, O.: Die Schleimhaut der Nasenscheidewand eine besonders geeignete Stelle für die Blutentnahme zu der Wassermannschen Reaktion und zu anderen serologischen Untersuchungszwecken, München. med. Wchnschr., 1909, lvi, 2321.
33. Somani, B. P.: Quantitative Bestimmung der luetischen Serumveränderung mittels der Reaktion von Wassermann, Neisser und Bruck, Arch. f. Dermat. u. Syph., 1909, xcviii, 73.
34. Finkelstein, J. A.: Zur Technik der Wassermannschen Reaktion, Berl. klin. Wchnschr., 1909, xlvi, 1611.
35. Heimann, W. J.: A Method for the Mathematical Reading of the Original Wassermann Reaction, THE JOURNAL A. M. A., May 21, 1910, p. 1684.
36. Eisenberg, R., and Nitsch, R.: Ueber Wassermannsche Reaktion mit künstlicher Antigen, Przeglad. Lekarski, 1909, No. 32. (Reviewed in Monatsh. f. prakt. Dermat., 1909, l, 131.)
37. Isabolinsky, M.: Weitere Untersuchungen zur Theorie und Praxis der Serodiagnostik bei Syphilis, Ztschr. f. Immunitätsforsch., 1909, iii, 143.
38. Schürmann, W.: Ein künstlicher Extrakt zur Anstellung der Luesreaktion, Med. Klin., 1909, v, 627.
39. Rajchman, L., and Zygmunt, S.: Praktische Bemerkungen zu der Frage der Wassermannschen Reaktion, Przeglad. Lekarski, 1909, No. 25. (Reviewed in Monatsh. f. prakt. Dermat., 1909, l, 138.)
40. Wechselmann: Ueber Verschleierung der Wassermannschen Reaktion durch Komplementoidverstopfung, Ztschr. f. Immunitätsforsch., 1909, iii, 525.
41. Lange, C.: Ergebnisse der Wassermannschen Reaktion bei Vorbehandlung der Sera mit Baryumsulfat nach Wechselmann, Deutsch. med. Wchnschr., 1910, xxxv, 217.
42. Hecht, H.: Zur Technik der Seroreaktion bei Syphilis, Ztschr. f. Immunitätsforsch., 1910, v, 572.

According to Blanck and Friedmann[43] alcoholic extracts of syphilitic liver at times lose their usefulness for the Wassermann reaction by being kept in the ice-chest or in a cold solution. They found that in some cases this could be remedied by allowing the extract to remain in a thermostat for several days. To preserve their efficiency best it is advised to keep extracts in a warm room.

Further researches on the feasibility of using urine in place of serum for the Wassermann reaction have been made by Pollio.[44] His conclusions are similar to those of Höhne, that the use of the urine has no practical value, as too large a percentage of positive reactions are given in non-syphilitic cases. Even Blumenthal and Wile, who first experimented with urine, admitted that it was not quite as reliable as blood-serum for the Wassermann test. Bauer and Hirsch[45] conclude that in positive reactions obtained by using urine the inhibition of hemolysis is due to the globulin fraction of the urine. They obtained negative results in non-syphilitic urine containing albumin and in syphilitic urine containing no albumin, or albumin in small amounts.

In a discussion by Stern[46] of uncertain and paradoxic reactions that are so often obtained by every serologist, some of the rules are given that are at present followed in the laboratory of the Neisser clinic at Breslau. Every serum is tested both by the original Wassermann and by the Stern method; that is, in both active and inactive condition. When the results are not in accord the serums of the cases that are clinically doubtful are tested once or more times, using various extracts known to be reliable. The same procedure is followed in serums giving a partial inhibition of hemolysis and in serums of apparently healthy persons giving a positive reaction.

That the Wassermann reaction as originally performed is not absolutely satisfactory from either the theoretical or practical standpoint is apparent from the many attempts that have been made to improve and simplify the test. Of the different methods depending on the principle of complement-fixation there are eight which might be termed systems, which were published before June, 1909. The principles on which these different systems are constructed are very plainly shown in a comparative table by Noguchi in his book on serum diagnosis.

Since last June another "system" has been added to the list by Foix,[47] who suggests the use of rabbit's blood for the indicator in place of sheep's blood. During the past year the modifications[48] of Bauer, Tschernogubow (second method), and more especially those of Hecht and Stern, have been the subject of a good deal of investigation in Europe, while the method of Noguchi has received especial attention in America. The final word is yet to be pronounced on these various modifications, as there is not yet an absolute opinion as to their value.

Very favorable results with the Hecht test are reported by König,[49] who finds it superior to both the original method and that of Margarete Stern. In a more recent communication on the method of Hecht, the same writer[50] concludes that it fulfils all the requirements of any modification, which are that: 1. It must have a scientific basis. 2. It must be simpler and more delicate than the original method. 3. It should never give erroneous results. Demanche and Ménard[51] conclude that the results of the Hecht test are practically as reliable as those of the original method. Scholtz[52] speaks of the test as simple and reliable. From his experience with 500 cases performed simultaneously with the Wassermann test, Werther[53] considers the Hecht method preferable, as it gives less often an incomplete inhibition; e. g., doubtful results. Favorable expressions of opinion on this method are also given by Stanculéanu and Liebreich[54] and by Sabrazes and Eckenstein.[55] Unsatisfactory results with the Hecht and with the Bauer test are reported by Hügel and Reute,[56] while both of these methods, as well as those of Stern and Tschernogubow, are condemned by Isabolinsky as giving less certain results than the Wassermann test.

The modification of the Hecht test, still further simplified by Fleming by the use of very small amounts of the ingredients, is condemned on the one hand by Bassett-Smith[57] and recommended on the other hand by Clemenger.[58] The former found that hemolysis failed to occur in 30 per cent. of his cases, whereas the latter found only 5 per cent. of failures.

Opinion on the second method proposed by Tschernogubow (the first method having been abandoned) do not seem to entirely agree. Stühmer,[59] from a comparative examination with the Wassermann test in over 300 cases, concludes that the procedure of Tschernogubow represents a great simplification and that its results are at least as reliable as those given by the original method. On the other hand, Guth[60] considers the test unsuited for a large laboratory, as the serum must be used immediately after being obtained, while for practicing physicians its performance is difficult.

43. Blanck and Friedmann: Ueber thermoreversible Zustandsänderungen der bei der Wassermannschen Reaktion verwendete alkoholischen Leberextrakte, Ztschr. f. Immunitätsforsch, 1909, iii, 108.

44. Pollio, G.: La reazione di Wassermann eseguita colle urine ha valore pratico, Riforma med., xxv, 231.

45. Bauer, R., and Hirsch, A.: Beitrag zum Wesen der Wassermannschen Reaktion, Wien klin. Wchnschr., 1910, xxiii, 6.

46. Stern, M.: Ueber die Bewertung der unsicheren und "paradoxen" Reaktion bei der serodiagnostischen Untersuchung der Syphilis, Ztschr. f. Immunitätsforsch., 1910, v, 201.

47. Foix, C. H.: Sur une technique simplifiée de réaction de fixation, Compt. rend. Soc. de biol., 1909, lxvii, 171.

48. The modification of Bauer dispenses with immune (artificial) amboceptor and depends on the natural antisheep amboceptor present in the patient's serum. The Hecht method dispenses not only with the immune amboceptor but also with the guinea-pig complement, utilizing the complement normally present in the patient's serum. Stern in her modification also relies on human complement, but unlike Hecht uses the immune amboceptor. Tschernogubow in his second method employs the red corpuscles of the guinea-pig instead of the sheep as his indicator. He also makes use of human complement. Noguchi employs human corpuscles as the indicator, guinea-pig serum for complement, and antihuman amboceptor.

49. König: Warum ist die Hechtsche Modifikation der Wassermannschen Luesreaktion dieser und der Sternschen Modifikation vorzuziehen? Wien. klin. Wchnschr., 1909, xxii, 1127.

50. König: Ueber die Hechtsche Modifikation der Wassermannschen Serореaktion, Deutsch. med. Wchnschr., 1910, xxxvi, 508.

51. Demanche, R., and Ménard, P. J.: Valeur de la méthode de Hecht pour le séro-diagnostic de la syphilis; comparison avec la réaction de Wassermann, Compt. rend. Soc. de biol., 1910, lxviii, 714.

52. Scholtz, W.: Ueber die jetzige Bedeutung der Wassermann Neisserschen Reaktion für die Diagnose und Therapie der Syphilis, Klin.-therap. Wchnschr., 1909, xvi, 1190.

53. Werther: Ueber das Wesen und den Wert der Wassermannschen Reaktion und 500 eigene Untersuchungen mit der Hechtschen Modifikation, Monatsh. f. prakt. Dermat., 1910, l, 147.

54. Stanculéanu, G., and Liebreich, N. E.: Die Anwendung der Methode von Bauer-Hecht für die Serumdiagnose bei Augenerkrankungen, Revista stiintzelor Med., 1909.

55. Sabrazès, J., and Eckenstein, K.: Note on a Simple Method of Fixation of the Complement in Syphilis, Lancet, London, 1910, clxxviii, 233.

56. Hügel and Reute: Bisherige Erfahrungen über die Serodiagnostik der Syphilis an der dermatologischen Universitätsklinik zu Strassburg, München. med. Wchnschr., 1910, lvi, 79.

57. Bassett-Smith, P. W.: The Diagnosis of Syphilis by Some Laboratory Methods, Brit. Med. Jour., 1909, ii, 377.

58. Clemenger, F. J.: The Diagnosis of Syphilis by Some Laboratory Methods, Brit. Med. Jour., 1909, ii, 575.

59. Stühmer, A.: Ueber die von Tschernogubow angegebene Modifikation der Wassermannschen Reaktion, Deutsch. med. Wchnschr., 1909, xxxv, 1517.

60. Guth, H.: Ueber eine (II) von Tschernogubow angegebene Modifikation der Wassermannschen Reaktion, Deutsch. med. Wchnschr., 1909, xxxv, 2319.

In reviewing the results obtained with the Stern modification we again find conflicting reports. An unfavorable opinion is given by Kleinschmidt,[61] who thinks that the use of this procedure may lead to errors in diagnosis. In a comparative examination of 200 cases discrepancies were found to the advantage of the Wassermann method in twenty-five cases. In 5 per cent. of the cases there was not sufficient complement to complete the hemolysis. Jacobeus and Bachmann[62] consider the modification of Bauer and Stern unreliable, as they give too many positive reactions in non-syphilitic cases. As treated cases of syphilis generally show an increased amount of amboceptor and complement, they suggest that a positive Bauer reaction (depending on natural amboceptor) or a positive Stern (depending on natural complement) might be considered as giving an unfavorable prognosis and indicating prolonged treatment. Schlimpert[63] and Meirowsky[64] warmly recommend the Stern modification, though both of these writers urge that it be performed simultaneously with the original Wassermann method.

NOGUCHI TEST

From this cursory review of the modifications that have been tested with considerable thoroughness abroad it is easy to see that no one method has succeeded in replacing the original procedure of Wassermann. It is unfortunate that the system of Noguchi has not as yet been more seriously considered by our foreign colleagues. In the recent book on serum diagnosis by Gastou and Girauld[3] the method is described at some length, although it has been practically performed only in a few cases. Among those of us in America who have had experience with the Noguchi method there is little doubt as to its very great value. The principles of the test, as well as minute instructions for preparing the reagents, are so plainly described in Noguchi's book that it seems strange that the method has not at least been given a trial in some of the foreign laboratories. In a recent contribution Noguchi[65] has tabulated the work of different American investigators who have experimented with his method, and it may be said that the results speak for themselves. The test has now been tried in over 8,500 cases, many of these in comparison with the regular Wassermann test. Kaplan, who formerly reported 8 per cent. positive reactions in non-syphilitic cases, states that during the past five months no such non-specific reactions have occurred. To meet the objections of Swift, who found thirty-five positive reactions in 201 non-syphilitic cases, Noguchi recently gave a public demonstration of his test at the clinic of the Pennsylvania Hospital. The serums of fifty-nine patients were simultaneously examined by Dr. Noguchi with his method, and by Dr. Swift, using the original technic of Wassermann. The results were absolutely identical.

SPECIFICITY OF WASSERMANN REACTION

The question of the specificity of the Wassermann reaction finally appears to be nearing a solution. The list of non-syphilitic diseases in which a positive reaction can be obtained more or less often is becoming more definitely settled. To this list, which includes leprosy, frambesia, sleeping-sickness, scarlatina, and malaria, must now be added, apparently, lupus erythematosus acutus. Fortunately these conditions do not often present any difficulty in being clinically differentiated from syphilis.

Several communications on the Wassermann reaction in leprosy have recently appeared in which the number of patients examined was fairly large. While agreeing that leprosy in general often gives a positive reaction, they do not agree as to the type of the disease in which the reaction is found. Thus Ehlers and Bourret,[66] in forty-seven cases of nodular and anesthetic types, found positive reactions in all except two cases. On the other hand, Eliasberg,[67] in fifty cases, found a much higher proportion of positive reactions in the nodular than in the anesthetic type. My own results[68] in an examination of sixty patients agree closely with those of Eliasberg, the latter obtaining only three reactions in nineteen anesthetic cases, while I found three reactions in twenty-two cases of this type.

Teissier and Bénard[69] in 100 cases of scarlatina found the reaction partially or completely positive in 84 per cent. of the cases. The reaction appeared at times as early as the third day and invariably disappeared at the end of convalescence. Using extract of human heart as antigen, Nanu-Muscel and Titu[70] obtained only negative reactions in 12 cases of malaria. In 8 cases the examination was made at the height of the paroxysm when the blood showed the presence of the plasmodium. According to Boehm[71] a positive reaction can be obtained in malaria only when the parasites are present in the blood.

In a case of that very rare condition, lupus erythematosus acutus, Reinhart[72] obtained a positive Wassermann reaction on two different occasions. After the patient's death a positive reaction was obtained from the blood. The autopsy showed no evidence whatever of syphilis. A second case of this disease is reported by Hauck,[73] in which on two occasions a positive reaction was found. In this case the patient survived and failed to show the reaction after the acute symptoms had subsided.

Interesting results are recorded by Wolfsohn[74] from an examination of 50 patients shortly after ether narcosis. A more or less strong positive reaction was found in 13 cases. Two of these patients were syphilitics, in whom the positive reaction persisted, while in the other cases the reaction disappeared in a few days. Wolfsohn concludes that in 22 per cent. of the cases a temporary positive reaction may be present as a result of ether narcosis. He considers his results

61. Kleinschmidt, H.: Ueber die Sternsche Modifikation der Wassermannschen Reaktion, Ztschr. f. Immunitätsforsch., 1909, iii, 512.

62. Jacobeus, H. C., and Bachmann, E. L.: Sur les différentes modifications de la réaction de Wassermann, Compt. rend. Soc. de biol., 1909, lxvii, 449.

63. Schlimpert, H.: Beobachtungen bei der Wassermannschen Reaktion, Deutsch. med. Wchnschr., 1909, xxxv, 1368.

64. Meirowsky, E.: Ueber die von M. Stern vorgeschlagene Modifikation der Wassermann-Neisser-Bruckschen Methode, Berl. klin. Wchnschr., 1909, xlvi, 1310.

65. Noguchi, H.: Further Studies on the Serum Diagnosis of Syphilis with Especial Reference to the Antihuman Hemolytic System, Internat. Clin., 1910, Series 20, i, 22.

66. Ehlers and Bourret: Wassermann-Reaktion ved Spedalsked. Ugesk. f. Laeger., 1909, No. 49. (Reviewed in Ztschr. f. Immunitätsforsch., 1909, Ref. ii, 1007.)

67. Eliasberg, J.: Komplementablenkung bei Lepra mit syphilitischem Antigen, Deutsch. med. Wchnschr., 1909, xxxv, 1922.

68. Fox, H.: The Wassermann and Noguchi Complement-Fixation Test in Leprosy, Am. Jour. Med. Sc., 1910, cxxxix, 725.

69. Teissier, P., and Bénard, R.: Recherches sur la réaction de Wassermann dans la scarlatine, Compt. rend. Soc. de biol., 1910, lxviii, 272.

70. Nanu-Muscel, J., and Titu, V.: La réaction de Wassermann dans la malaria, Compt. rend. Soc. de biol., 1910, lxviii, 188.

71. Boehm, W.: Malaria und Wassermannsche Reaktion, Malaria, 1909, i, 191.

72. Reinhart, A.: Erfahrungen mit der Wassermann-Neisser-Bruckschen Syphilisreaktion, München. med. Wchnschr., lvi, 2092.

73. Hauck: Positiver Ausfall der Wassermann-Neisser-Bruckschen Syphilisreaktion bei Lupus erythematosus acutus, München. med. Wchnschr., 1910, lvii, 17.

74. Wolfsohn, G.: Ueber Wassermannsche Reaktion und Narkose, Deutsch. med. Wchnschr., 1910, xxxvi, 505.

as a new proof of the biologic non-specificity of the Wassermann test, and of its close relation to lipoid bodies, as the lipoid substances of the brain and cord are the ones that are bound up in the anesthetic and cause narcosis.

The rather surprising statement is made by Gjorgjevic and Savnik[75] that in examining 24 psoriasis patients giving no history or signs of syphilis, a positive reaction was obtained in 20 cases. As the majority of the reactions were only weakly positive their results will have to be disregarded unless confirmed by other investigators.

Actuated by the report of Bass, who, using lecithin as antigen, found 6 positive reactions in 6 pellagra patients, I examined 30 patients[76] with this disease with the Noguchi modification. My conclusions were that pellagra does not often give a positive reaction. The few reactions obtained were weak and easily distinguished from those found in cases of syphilis. In a discussion of my paper Dr. Bass stated that in subsequent examinations in which he used organ extracts as antigen his results were similar to mine.

To show finally how small after all is the proportion of positive reactions obtained in non-syphilitic cases, Bruck has collected from the literature 5,028 control cases in which only 59 positive reactions were found. This seems indeed a small number when the possibility of unrecognized latent infection is considered.

FIELD OF APPLICATION OF SERODIAGNOSTIC TEST

Of great importance are the results that have been obtained in diseased conditions of the heart and arteries. Donath[79] concludes that the syphilitic etiology of aortic insufficiency and aneurism, as well as cases of clinically suspicious mesaortitis, is proven by having obtained a positive Wassermann reaction in 85 per cent. of the cases. Bruckner and Galesco[80] think that syphilis plays the principal rôle in the etiology of aortic insufficiency, as they found a positive reaction in 17 out of 22 cases. The five patients giving a negative reaction were younger persons, from 14 to 20 years of age, who had suffered from repeated attacks of rheumatism. From an examination of twenty-five cases of various lesions of the heart, Oigaard[81] found positive results in patients suffering from aortic aneurism and uncomplicated aortic insufficiency while negative reactions were obtained in those with lesions of the mitral valve. In 8 out of 9 cases of aortic insufficiency the reaction was also found to be positive by Krefting.[82]

From a study of 130 cases of disease of the eye in which the Noguchi test was performed, Martin Cohen[83] found some interesting results. He considers that "in brain cases with choked discs in which the indications for operations are doubtful and lues is suspected, the presence or absence of the reaction furnishes a valuable confirmatory aid which is speedier or probably more satisfactory than the therapeutic test." He further states that some light may be thrown on the heretofore obscure etiology of retinitis pigmentosa from the large proportion of positive reactions obtained. His conclusion that the Wassermann test is of value in the diagnosis of diseases of the eye is shared by Schumacher[84] and by Hessberg.[85]

The application of the Wassermann reaction to otologic cases has apparently added to our knowledge of the cause of nerve-deafness. In examining 29 patients with this condition Busch[86] found 15 strongly positive reactions, or 52 per cent., from which he concludes that syphilis plays a more important rôle in the etiology of nerve-deafness than has previously been supposed. Similarly Beck[87] has found 10 positive reactions in 34 cases of internal ear disease in which there was no disease of the sound-conducting apparatus. In a recent examination (Noguchi test) of 128 cases of ear disease by E. P. Fowler[88] it was found that the greater number of positive reactions in adults were obtained in cases of nerve-deafness and chronic catarrhal disease of the middle ear.

Some opinions regarding the relationship of syphilis to ozena may have to be revised in the light of recent experience with the Wassermann reaction. The results thus far obtained would seem to indicate that syphilis plays little or no part in the etiology of this disease. Sobernheim[89] has recently examined 4 cases of ozena of long standing in which evidences of very recent syphilitic infection were present. The cases, as would be expected, gave a positive reaction. The same writer had previously tested 17 cases of ozena in all of which the results were entirely negative. Weinstein[90] obtained only negative results in examining 8 cases of ozena and the same results were found by Alexander[91] in a series of 26 cases.

Additional light has been thrown on the intensely interesting problems of syphilitic heredity by recent investigations with the Wassermann reaction. Knoepfelmacher and Lehndorff[92] in examining 116 apparently healthy mothers of syphilitic children, found positive reactions in 62 per cent. of the cases, corroborating the work of the others that had been done in this direction. The inference might be drawn that the mothers were suffering from latent syphilis, a fact which might offer an explanation of Colles' law. That the inference is not to be drawn from the results of the Wassermann reaction alone has been set forth by Baisch.[93] He also found a large proportion of his reactions in apparently healthy mothers of syphilitic infants, and thinks that

75. Gjorgjevic, G., and Savnik, P.: Ueber die Wassermannsche Reaktion bei Lues und bei Psoriasis vulgaris, Wien. klin. Wchnschr., 1910, xxiii, 626.

76. Fox, H.: The Wassermann Reaction (Noguchi Modification) in Pellagra, New York Jour., 1909, xc, 1206.

79. Donath, K.: Ueber die Wassermannsche Reaktion bei Aortenerkrankungen und die Bedeutung der provokatorischen Queck-silberbehandlung für die serologische Diagnose der Lues, Berl. klin. Wchnschr., 1909, xlvi, 2015.

80. Bruckner, J., and Galesco: Syphilis et insuffisance aortique, Compt. rend. Soc. de biol., 1910, lxviii, 74.

81. Oigaard: Wassermann-Reaktionens Betydning ved Hjerte og Karsygdomme, Hosp., Tid., 1909, No. 49. (Reviewed in Ztschr. f. Immunitätsforsch., 1910, ii, 1008.)

82. Krefting, R.: Leichensera und die Wassermannsche Syphilisreaktion, Deutsch. med. Wchnschr., 1910, xxxvi, 366.

83. Cohen, M.: The Value of the Sero-diagnosis of Syphilis in Ophthalmology: A Preliminary Report, Arch. Ophth., 1910, xxxix, 93.

84. Schumacher, G.: Die Serodiagnose der Syphilis in der Augenheilkunde nebst Bemerkungen über die Beziehungen der Tuberculose zur Syphilis bei Augenleiden, Deutsch. med. Wchnschr., 1909, xxxv, 1915.

85. Hessberg, R.: Beiträge zur Bedeutung der Serodiagnose der Syphilis für die Augenheilkunde, Klin. Monatsbl. f. Augenh., 1910, xlviii, Beilageheft, p. 60.

86. Busch, H.: Wassermannsche Seroreaktion bei nervöser Schwerhörigkeit und Otosklerose, Beitrage Ohres, Nase, Halses, 1909, iii, 42.

87. Beck, O.: Ueber die Erkrankungen des inneren Ohrs und deren Beziehungen zur Wassermannschen Serumreaktion, Monatschr. f. Ohrenh. u. Laryngo-Rhinol., 1910, xliv, 28.

88. Fowler, E. P.: The Serodiagnosis of Syphilis in Its Relation to Disease of the Ear, Ann. Otol., Rhinol. and Laryngol., 1910, xix, 367.

89. Sobernheim, W.: Ozaena und Syphilis: Neue Beobachtung, Arch. f. Laryngol. u. Rhinol., 1909, xxii, 430.

90. Weinstein, J.: Ueber die Bedeutung der Wassermannschen Syphilisreaktion für die Rhino-Laryngologie, Deutsch. med. Wchnschr., 1909, xxxv, 1696.

91. Alexander, A.: Serodiagnostische Untersuchungen zur Frage der Beziehungen zwischen Ozaena und Syphilis, Ztschr. f. Laryngol., 1909, i, 669.

92. Knoepfelmacher, W., and Lehndorff, H.: Das Collesche Gesetz, Med. Klin., 1909, v, 1506.

93. Baisch, K.: Die Vererbung der Syphilis auf Grund serologischer und bacteriologischer Untersuchungen, München. med. Wchnschr., 1909, lvi, 1929.

such findings might be explained on theoretical grounds in three ways. In the first place, the mothers might have been victims of latent syphilis. In the second place, the mothers might have been healthy, the positive reaction being due to inhibitory substances that had been produced in the child and passed through the dividing wall of the placenta into the mother's circulation. In the third place, the mothers might have been immune to syphilis, assuming that the inhibitory substances represent immune bodies produced in either fetal or maternal organism and circulating in the mother's blood. To settle the question Baisch combined the serologic examination of the mother and child with examinations for the *Spirochæta pallida* in the placenta. He found in these clinically healthy women, giving a positive Wassermann reaction, that the spirochetes could be found in both fetal and maternal portions of the placenta as well as in the maternal circulation, apparently proving the first possibility, namely, that the mothers were the bearers of latent syphilis.

Speaking further for this explanation and against the possibility of the reaction being due to inhibitory bodies passing from the child to the mother, is the fact that the positive reaction in the mother does not disappear after the birth of the child. Furthermore, the reaction can be positive in the mother and negative in the child. Bruck has pointed out that a number of cases have been reported in which a syphilitic child gave a negative reaction at birth, and later when manifestations appeared the reaction became positive. In spite of this the mother at the time of the birth gave a positive reaction. In these cases a passage of the inhibitory bodies from child to mother was certainly impossible. The most difficult cases to explain would be the ones in which the mothers, in addition to being clinically healthy, gave a negative reaction while their offspring were shown to be undoubtedly syphilitic from demonstration of the presence of the spirochetes. It might be thought that in these cases we had to deal with pure paternal heredity, or the explanation might be found in the failure of the Wassermann test to show a positive reaction. The proof that the explanation lay in the failure of the test was apparent from the fact that in the negative as in the positively reacting mothers, spirochetes were found in both portions of the placenta and in the maternal circulation.

Not only may our ideas concerning Colles' law have to be revised, but also those concerning the law of Profeta, which says that apparently healthy children of syphilitic parents are immune to syphilis, at least up to the time of puberty. The presence of a positive Wassermann reaction in a large number of these supposedly healthy children goes far to prove that here again the immunity to syphilis is only apparent.

That not only hereditarily syphilitic infants but also older children suffering from hereditary syphilis give a higher proportion of positive reactions has been shown by Bertin and Gayet.[94] In examining 25 undoubted cases of hereditary syphilis they found positive reactions in all but one case. Knoepfelmacher and Lehndorff[95] also conclude that older heredo-syphilitic children give a positive Wassermann reaction more often than adults in the late stage of acquired syphilis.

In conclusion it would seem that there has been some very substantial progress during the past year in the serum diagnosis of syphilis. The continued investigations on the Wassermann test have not only added much that is new to our knowledge, but have tended to confirm the view that the reaction is one of very great practical value. The results obtained in a number of other diagnostic tests for syphilis must at least be considered as encouraging.

94. Bertin and Gayet: Syphilis héréditaire et réaction de Wassermann, Rev. de méd., 1910, xxx, 395.
95. Knoepfelmacher, W., and Lehndorff, H.: Untersuchungen heredoluetischer Kinder mittels der Wassermannschen Reaktion, Das Gesetz von Profeta, Wien. med. Wchnschr., 1909, lix, 2230.

SUMMARY

1. The various precipitation tests for the diagnosis of syphilis are too unreliable to be of much practical value.

2. The Schürmann color reaction has been extensively tried and found to be worthless.

3. The favorable results that have been claimed for the intradermic reaction are at least encouraging, as the performance of the test seems to be simple.

4. Excellent results have been claimed by Richard Weil for his cobra venom test. They are, however, somewhat lessened in value by the fact that very considerable experience is required to perform the reaction.

5. Further investigations are required to show whether the leuko-diagnosis, the antitryptic index or the meiostagmin reaction can be used as diagnostic aids in syphilis. The results obtained with the Much-Holzmann reaction appear to be of no value.

6. The artificial antigens of Sachs and Rondoni, and of Schürmann for the Wassermann reaction have not succeeded in replacing the use of organ extracts.

7. The use of barium sulphate suggested by Wechselmann to remove the disturbing complementoids from the patient's serum has apparently given a greater proportion of positive reactions than those obtained by the original Wassermann method.

8. The use of urine in place of serum for the Wassermann reaction is not to be recommended.

9. No single modification has as yet entirely replaced the original Wassermann method. The modifications of Hecht and of Stern have apparently given good results abroad, while the Noguchi test has received almost universal recognition in America. The methods of Bauer and of Tschernogubow (second test) appear to be of much less value.

10. To the list of non-syphilitic diseases which at times give a positive Wassermann reaction, must apparently be added lupus erythematosus acutus. It has also been found that many cases give a positive reaction following ether narcosis.

11. The diagnostic value of a positive reaction is generally recognized. There is no general agreement as yet regarding the value of the test as a guide for treatment.

12. From recent serologic investigations it would appear that syphilis plays a very important rôle in the etiology of aortic insufficiency. Syphilis is probably of more importance in the causation of nerve-deafness than has been previously supposed. There is apparently little or no relation between syphilis and ozena.

13. A new field seems to have been opened by the Wassermann reaction for the discussion of the problem of the inheritance of syphilis and of the interpretation of the laws of Colles and Profeta.

14. In the field of pathologic-anatomic diagnosis the Wassermann reaction seems to be of considerable value.

15. Serologic examinations have shown that the percentage of syphilitic infections in prostitutes is extremely high.

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PELLAGRA *

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While engaged in the study of 130 cases of amebiasis (amebic dysentery) during portions of 1907, 1908 and 1909, at the Marine Hospital in San Francisco, it was noted that the majority of the patients showed symptoms of secondary complications. Some complained of rheumatic pains and neuralgias; others complained of headache and indigestion and became constipated at times; others showed lesions on the hands, feet and legs which were thought to be trophic in character and which were usually in the form of dryness of the skin, or in the form of small pinhead-sized vesicles, which tended to coalesce and later to form bullæ. There was also more or less marked interference with the mobility of the various joints and of the spine.

In searching for the cause of these symptoms the *x*-ray demonstrated that the rheumatic pains, neuralgias, etc., were apparently caused by the presence of some sort of deposit on the articular surfaces of the vertebræ, which so encroached on the foraminæ giving exit to the nerves, particularly at the posterior portion, as to produce mechanical pressure on the nerves at their exit. The headache, constipation and indigestion seemed to be due to injury to the intestinal mucous membrane by the amebas. Microscopic examination of the feces constantly showed muscle-fibers, starch, vegetable cells and fibers, ammonium and magnesium phosphate crystals, fatty acid crystals, oxalate of calcium crystals, cholesterin plates, mucus, pus, blood, blood pigment, soaps and fats, amebas, monads and frequently eggs of other parasites, as hookworm, roundworm, whipworm and, at times, the hyphæ and sporangiæ of molds. The trophic lesions were thought to be due to the mechanical pressure on the nerves, which had been so long continued as to interfere with their functions; the loss of motion in the spine and the joints to the pressure of the deposits, above mentioned, which could be seen in the *x*-ray plates. On examining my first pellagra patient, last November in Columbia, I was much struck by the resemblance pellagra had to the cases of amebiasis above mentioned. After reading all the literature on pellagra that I could, and from talking with Lavinder and others who had had experience with pellagra, the following working hypothesis was formulated, and the studies carried out in Columbia, S. C., were directed toward proving or disproving the various parts of the hypothesis.

WORKING HYPOTHESIS REGARDING THE NATURE OF THE DISEASE

The hypothesis is as follows: Pellagra is a disease resulting from an injury to the intestinal mucous membrane, produced by the ameba. As a result of the ulceration there is an inflammatory process extending throughout the alimentary tract which interferes with the absorptive power of the intestine and the manufacture of the digestive ferments normally produced in the intestines. Later, owing to long-continued inflammation in the intestine, the pancreas and liver undergo inflammatory change which interferes with the quality and quantity of the digestive juices that they produce, with the result that the food ingested is improperly digested. The presence in the intestine of undigested food favors fermentation and putrefaction of its elements, with the production of certain toxins, ptomains and intermediate products of digestion which are harmful to the body.

As it has been shown by Herter that the *Bacillus aerogenes capsulatus* is present in the intestines of carnivora, and readily ferments proteid matter, it was decided to look for it as one of the possible causes of the fermentation. The fermentation of the carbohydrates could be accounted for by the colon bacillus.

The insanity of pellagra was assumed to be due to the severe and long-continued toxemia. The lesions on the hands, neck, feet, face and genitalia were assumed to be due to two factors: first, the mechanical pressure on the nerves at their exit from the spinal canal, and second, the degeneration of the nerves themselves as a result of the toxemia. The degeneration of the cord was assumed to be due to the long-continued mechanical pressure on the posterior roots of the spinal nerves, which would tend to have the same effect as section of the nerve.

It was assumed that the seasonal recurrence of the disease was due to the extremes of atmospheric temperature which exist during the socalled pellagra season, namely, March, April and May, and September, October and November. This assumption was not formulated until I had been in Columbia some time and had noted the changes myself.

INVESTIGATION OF HYPOTHESIS

An outline of the work done along the above lines will now be given: Examination of the stools of fifty-two of the patients showed amebas constantly present in the stools of fifty. In the two cases in which amebas were not found the stools were not satisfactory, in that they were not sufficiently liquid, and other specimens could not be obtained. Ulceration and damage to the intestine was shown, in all stools examined, by the presence of mucus, pus, blood pigment and blood.

That the liver and pancreas were damaged was shown at autopsy by the fact that both of these organs revealed cirrhotic changes, the pancreas especially being so hard as to be almost leathery in consistence; this was also evidenced by the presence of muscle fibers, vegetable cells and fibers, starch, soaps and fats in the stools. The latter observation, in addition to the fact that a damaged and ulcerated intestine cannot absorb as well as a normal one, might also be accepted as partial evidence as to faulty absorptive power on the part of the intestine.

Fermentation and putrefaction were shown by the presence of crystals in quantity in the stools, by the odor, by the fact that the stools were frequently fermenting and giving off bubbles of gas in the paper cups in which they were brought to the laboratory. The stools were invariably acid in reaction, frequently requiring as much as 5 to 10 c.c. of a 1/10 normal solution of sodium hydroxid to produce a reaction with phenolphthalein in 25 to 30 c.c. of stool. Van Noorden states in effect, in his work on "Metabolism and Nutrition," that acid fermentations, in that they withdraw bases from the blood to form compounds with the acids produced, diminish the alkalinity of the blood, and produce serious results.

The *Bacillus aerogenes capsulatus* was found in one case, according to the method of Welch, by injecting fecal matter into the ear vein of a rabbit, after a few minutes killing the rabbit, and allowing it to remain on the top of the incubator till the following day, when it

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was seen that the body was swollen with an inflammable gas, the organs were much decomposed, and the tissues generally were edematous.

In one case which had been under treatment until the stool was neutral in reaction, and in which crystals and the other signs of fermentation and putrefaction could not be found, the *Bacillus aerogenes capsulatus* could not be recovered. On account of the limited time and the difficulty of obtaining animals more experiments of this kind could not be made.

As regards the cause of the insanity, nothing definite was worked out, but it was noted that sudden changes in the atmospheric temperature made the cases much more toxic, and whereas the patients may have been fairly sane, they would become excited and would frequently have to be placed under restraint. This applied not only to the pellagrins, but to other patients in the asylum as well. This I cannot satisfactorily explain, unless it be due to the alternating warming and chilling of the surface of the body, causing the blood to leave the surface capillaries and producing an engorgement of the vessels of the intestines, and by so doing increasing the activity of the processes at work therein.

As to the lesions on various parts of the body, in every case of pellagra in which radiographs were made the plates showed deposits in the spinal foraminæ which apparently produced pressure on the nerves. As to the part played by toxic degeneration of the nerves themselves, I can only repeat what I was told by Dr. Achucaro of the Government Hospital for the Insane, Washington, D. C., that experiments show that when various tissues, such as nerve, muscle and fat, are allowed to decompose, the nerve, being the most highly specialized of all the tissues, shows evidences of degeneration first.

It is possible that several factors may be concerned in the seasonal recurrence of the disease: First, renewed activity and new infections with amebas in the spring of the year; second, engorgement of the intestines due to chilling of the body surface; third, the growth of molds in food products, with resulting changes in these products, which could favor fermentation in a person already debilitated.

As to the degeneration of the posterolateral columns of the spinal cord, Marie made the observation that the degeneration began in the posterior roots of the spinal nerves; the radiographs show that the pressure does come on the posterior roots of these nerves, at about the site of the ganglion. Further, at the only autopsy I could obtain, it was noticed that the foramina were so filled with what seemed to be a firm cartilage-like deposit that the nerves were wedged therein, and a large-sized sewing-needle or a Japanese toothpick could not be pushed through the foramina. The spinal canal was also partially filled.

In Gray's "Anatomy" the following statements are made:

> The roots of the cervical nerves increase in size from the first to the fifth and then remain the same size to the eighth. The posterior bear a proportion to the anterior as 3 to 1, which is much greater than in any other region.

It may be seen from the skeleton and the radiographs that the foramina in the cervical region decrease in size from above downwards, whereas as above stated, the nerves increase. These facts would seem to account for the lesions on the hands (fifth, sixth, seventh, eighth cervical and first dorsal), face and neck (third and fourth cervical).

With reference to the dorsal nerves Gray says, "The roots of the dorsal nerves are of small size, and vary but slightly from the second to the last." Examination of the skeleton shows these foramina to be larger than the lower cervical, and therefore there are no lesions on the parts innervated by the dorsal nerves.

The lesions on the legs and feet are due to pressure on the first and second sacral nerves, of which Gray says, "The roots of the upper sacral nerves are the largest of all the spinal nerves; while those of the lowest sacral and coccygeal nerves are the smallest." The foramina are larger than the other intervertebral foramina but are more tortous, and as the spinal canal in the sacrum is incomplete posteriorly and flattened, it is possible that any deposit here will produce pressure symptoms as in the other vertebræ.

TREATMENT

The amebiasis was treated by enemas of quinin bisulphate in normal salt solution. After a preliminary purge, the patient was put on a diet of milk, toast, rice and starchy foods. To aid the pancreas, pancreatin was administered in capsules coated with phenylsalicylate, in order that the hydrochloric acid of the stomach could not act on and destroy the pancreatin. To assist the pancreatin and neutralize the acidity present in the intestine, sodium bicarbonate was given, also in capsules coated with phenylsalicylate. To prevent accumulations of food and resulting fermentations, small doses of salts were given often enough to cause one or two bowel movements per day, not counting the results of the enema as a movement. The deposits were treated by inunctions of mercury and the internal administration of iodid of potassium, both pushed to the therapeutic limit. Rest in bed was ordered till the acute symptoms had subsided.

In all, twenty-five patients were treated, with the following results: Three died; of these, two died of chronic amebic dysentery, the pellagra lesions having practically disappeared; the other, just prior to death, was having from eighteen to twenty stools per day, and the pellagra lesions had improved, until the week before death, when secondary infections began in the lesions, and they became purulent. Twelve patients improved in varying degrees, both mentally and physically. Since these were insane negroes and no cooperation could be received from the patients themselves, it was surprising that they improved at all. Six others also were improved, the last time I saw them, and, in accordance with information just received, they are continuing to improve. Four recovered, and all symptoms of pellagra had disappeared, except a slight increase in the patellar reflexes.

While many of the studies seem more or less suggestive, and while the percentage of improved and recovered seems encouraging, I feel that, in accordance with accepted medical standards, no conclusions can be drawn as yet, and that much longer and more detailed studies will be needed to prove or disprove the value of the researches just outlined.

In conclusion, I wish to acknowledge my indebtedness to Dr. J. W. Babcock, of the State Asylum at Columbia, for his kindnesses, assistance and many courtesies. I also wish to thank Dr. R. W. Gibbes, of Columbia, for the excellent radiographs he has taken, and the members of the asylum staff and the physicians of Columbia for permission to study their cases.

Since completing my studies in Columbia, I have seen nine positive and sixteen suspicious cases in the Philadelphia Hospital for the Insane. Of twelve specimens of stools examined from these cases, all showed amebas.

THE FARM; THE NEXT POINT OF ATTACK IN SANITARY PROGRESS *

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The careful student of sanitary progress in the United States to-day is early impressed with the great contrast between the sanitary conditions in country districts and those in the cities. Recent years have witnessed great progress in the cities. Effective health departments have been organized, and the effect of measures such as the supervision of water and milk-supplies, the visiting nurse and the tuberculosis dispensary, medical inspection of schools and the accurate control of contagious diseases has been so pronounced as to place their work on a firm basis, and to insure its continuance and extension. While much remains to be done in the cities, the foundation has been laid and the methods of work more or less standardized. It is not too much to say that we are within sight of the solution of many of the problems of municipal sanitation.

While these facts are true of the cities, in those states with which we are familiar no such condition exists in the country districts. They remain as they have been for years, without efficient organization, depending on the methods and beliefs of thirty years ago. In only a few states is there adequate supervision of the rural communities; only a few states require the reporting of even the most dangerous of contagious diseases, and in most cases what activity there is in the country districts is confined to the control of smallpox, diphtheria and scarlet fever, with occasional attention to a flagrant nuisance. The vast contributions of modern science to the prevention of disease are for the most part lost to the people of the country for the lack of organization and education. There are, of course, isolated exceptions to this statement, such for instance as the wonderful work of the Pennsylvania Department of Health in connection with tuberculosis in rural districts, but for the most part conditions are as stated.

The reasons for this contrast are, in the main, perfectly obvious. There is in the first place a greater survival of the individualistic idea of life in the country than in the city. Government touches the life of the individual in the country to a limited degree only. His personal liberty, so called, is seldom invaded. He is, and he considers himself to be, a law unto himself. In the city the communal idea prevails; no man lives unto himself alone; government is at the elbow of every citizen. In the second place, the very isolation of the country makes it almost impossible in the circumstances to educate the country people in the importance of health measures. A single successful campaign against measles or diptheria or impure milk will generally convince the people of the city of the importance of health measures. As such a campaign is difficult or impossible under present conditions in the country, education comes more slowly and the support of health measures is always more doubtful. In the third place, the contrast between country and city is largely due to the fact that health measures are more obviously necessary in the city than in the country. The crowded city demands health protection. Where our nearest neighbor lives half a mile away he may suffer from a wide variety of diseases and we may never feel the danger, but where we are separated from contagious disease only by the partition wall of an apartment house, we feel the necessity for and yield more readily to preventive measures.

The explanation for this contrast, however, is not its justification. The country, no less than the city, needs health education. The country, even more than the city, stands in need of fundamental health precautions. The very mass of disease in the country districts of itself requires that this problem be attacked, but the bearing of rural sanitation on the health of our cities is perhaps a still more immediate reason why our point of attack should be shifted. The health of the city depends in a large measure on the health of the country. Practically all the food-products of the city come from more or less remote country districts. A single case of typhoid fever on a dairy farm may, under certain conditions, infect a whole city, and emphasize to all the intimacy of the sanitary connection. In the same way, close intercourse between cities and the country renders the former particularly liable to infection from the latter. Our experience in Virginia, which is doubtless borne out by that of other states, has convinced us that the prevention of smallpox in the cities is very largely dependent on the close inspection of smallpox in the country, since most cases of this disease are brought into the cities from rural districts or small towns. Then, again, there is a crying need for better rural sanitation because of the more or less general residence of city people in the country during vacation time. We have found in Virginia that the country boarding-house is one of the great sources of our typhoid fever, and many of the cases which appear in the cities after vacation can be traced directly to the bad sanitation of country resorts. If, therefore, the health of the cities is to be improved, the health of the country must also be bettered. And if the nation is ever to stamp out disease, it must be by a general attack in both the city and the country.

In addition to the crying need for such work rural conditions offer to the scientific sanitarian the attraction of almost unparalleled opportunities for research work in the transmission of disease. In typhoid fever particularly, we in Virginia are firmly of opinion that the key to the eradication of our summer typhoid is to be found in the country. To trace the means of dissemination of typhoid bacilli in a city, with its manifold sources of food-supply, the complication of the milk-supply, with daily contact between thousands of persons any one of whom may be in the incubative stage of the disease or may be a typhoid carrier, and with the constant temptation to attribute the infection to the water-supply, is beset with so many difficulties as to make it almost hopeless. The best that can be done is to draw general conclusions from the study of large groups of cases, and even here it is difficult to exclude the general factors of flies, milk and water.

In the country, conditions are very different. Given a country district free from typhoid for several years, the first case is easily discovered, and the transmision of the disease may often be worked out with mathematical accuracy. Water and milk are, of course, easily excluded; flies may be considered with some accurate idea as to their importance as a factor in transmission; and the actual amount of contact resulting in infection may often be determined exactly. We have been able to do this in Virginia in a number of instances with results of the greatest interest. This work extended over a large area, and, combined with careful statistical

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studies will throw more light on the city problem than can be obtained in the city itself by any means known at present.

Nor is typhoid the only disease which can be advantageously studied in the country. We have found the study of the transmission of smallpox in rural districts to be of great interest by reason of the fact that the time, place and manner of contact can be worked out with ease and certainty. Diphtheria and scarlet fever, studied case by case in rural districts, should throw great and much-needed light on the transmission of these diseases.

It may not be amiss at this point to call attention to the value of the case method of study of infectious diseases in rural work. A personal visit to each patient, the collection of the data needed at the place where the disease occurred, and the interpretation of the epidemiologic evidence in the light of the other information secured by a visit to the premises, offers by far the most promising method for the solution of the problems now pressing for solution.

The rural districts, however, offer even greater possibilities in practical prevention than as a field for studies in the transmission of disease. The separation of individual cases, the slowness and freedom from complication of the intercommunication, render health work in the country much easier than in cities. With trained men, and an adequate system for promptly collecting and studying morbidity statistics, preventive work in rural districts may be made to have the efficiency of a well-oiled machine.

Even here, however, it is obvious that all the phases of sanitation which arise in the study of rural conditions cannot be studied fully by the limited force at the disposal of the average state health department. Some limitations must be made and some problems in the country must receive more attention than others. In Virginia we have carefully considered the subject and have concluded that, for the present at least, typhoid fever and hookworm diseases should receive first attention. The reason for this decision will, I think, be obvious to all. Typhoid fever is and will probably remain the greatest single problem of rural hygiene. High as is the death-rate from typhoid fever in the country as a whole, it is highest in the South; and awful as is the toll which most Southern cities pay to this disease, their burden is not so heavy as that of the rural sections of the same territory. Hookworm has been placed beside typhoid fever in this work because we are convinced that hookworm plays a part hardly less important than that of typhoid fever in the South and is essentially a disease of the country.

If we must study rural hygiene for its own importance, and if we must limit our study for the present at least to these diseases which are the most disastrous, we must begin our study on the farm. We should not, of course, omit the small towns, as they offer problems intermediate between those of the city and those of the country. But a study of these towns convinces us that in the main the dangers are essentially those of the farm, and the problem is practically the same in its fundamental aspect as that to be encountered in the country.

The farm is the point of attack, and in the work against the diseases I have mentioned the farm is the unit both in the spread and prevention of infection. Each farm is, to all intents and purposes, a separate community, with its own population, its own problems of sanitation, and its own forces for good and evil. The work we would do for the improvement of rural conditions of sanitation must be done for the improvement of the farm.

Studies of sanitary conditions on farms, such as those of Stiles, show facts that are almost unbelievable in the light of our knowledge regarding soil pollution. These studies have been confirmed by our work in Virginia. We have inspected in the course of our work against typhoid and hookworm diseases thousands of farms, and it is the exception rather than the rule that we find even the most primitive sanitary arrangements in use by the people. The privy, if existing at all, is old, in bad repair and of antiquated design. Its use is confined almost exclusively to the female members of the family, the males relying on still more primitive methods of disposal. The contents are open to the chickens, the hogs, the dogs and the flies, and these agencies are relied on to take care of the small amount of material actually deposited in them.

Water-supplies follow the same general tenor, the wells being usually carelessly dug, carelessly protected, if protected at all, and carelessly kept. The well tops, almost without exception, show wide cracks through which filth is washed at all times into the well; the buckets are handled by all kinds of hands and then carefully lowered into the well for the only cleaning they ever get. The personal habits of the average inhabitant of a rural district are of a character in keeping with the other sanitary conditions. The absence of running water, and particularly hot water, make effectual cleanliness, especially in cold weather, difficult, and the amount of water used per capita per day is exceedingly small.

It must, of course, be admitted that in every rural community there are those of sufficient intelligence, self-respect, and ability to rise above these conditions and to provide themselves with modern sanitary conveniences, but, particularly in regions where the economic standard of rural life is low, these exceptions are few, and for the most part conditions are as I have described them.

Even under these conditions, amazing as it may seem, there are many rural communities which are and have been for many years practically free from typhoid, despite the prevalence of the disease in this country. There are others in which hookworm has apparently never gained a foothold, but the introduction of a single case of typhoid under favorable conditions is sufficient to give rise to a wide-spread outbreak of the disease, and hookworm infection, though slower in its spread, is equally certain to infect the entire community under these conditions.

These conditions, then, fix the problem of the farm, if they do not solve it, and indicate the direction our work must take. The building of a proper privy with its habitual use by every member of the farm community, its regular and frequent cleaning and proper disposal of the material, the safeguarding of the water-supply, and the instruction of the people as to the necessity of obeying the Scriptural injunction to wash before meat, are not of themselves difficult, expensive or revolutionary procedures. Moreover, when we take into account the fact that the carrying out of these procedures will do much to secure the immunity of the inhabitants of the farm from soil-pollution disease, it does not seem that it would be difficult to secure their adoption. When we face the problem in Virginia, however, of putting these measures into effect on hundreds of thousands of farms, scattered over forty thousand square miles of territory, and containing a population of one and a half million, who live under a governmental system which promotes

the idea of individualism and individual rights, the question does not seem so simple.

The problem must, of course, be attacked in detail, county by county, district by district, farm by farm and individual by individual.

It has seemed to us that in attempting to solve this problem in the State of Virginia we could well take a leaf from the book of modern industrial enterprise; that the methods which have been worked out by the marvelous organizations of commercial interests might well be of use in a work of this kind. The problem of a man who would teach the people proper sanitation is not essentially different from the problem of the man who would sell them a book, or a safety razor, or induce them to buy an improved churn. The proposition is a selling proposition, and our forces may well be modeled on the sales force of any modern industrial enterprise.

The first question is that of advertising, or, as we are accustomed to speak of it, of education. At the outset it should be insisted on that such health education or advertisement should be an education regarding the fundamental principles and established facts and not regarding individuals or experimental ideas. In our advertising campaign to reach the farmers we must suppress all personal references and make our advertising carry sound and proved facts of sanitation. We must advertise our product and not our sales-manager.

The forms of publicity to be used in this educational campaign are varied, and practically all of them are to-day being used in common by commercial and health organizations. Press notices, which are easily secured at small cost by a proper press-agent, are of enormous value; special stories are gladly carried by newspapers if they do not carry too much self-advertisement; bill-boards, magazine stories and articles, and special publications of various health departments are being used daily in this work. In addition, lectures, exhibits, special railroad exhibit cars, demonstrations in railway stations and public places, all have their place and all are being used by public health agencies.

But these are not of themselves sufficient. They arouse the interest or excite the curiosity of those whom we wish to reach, but they do not give the individual the necessary impulse for immediate action. We must have something more personal, more direct and impelling to obtain the results that are necessary. Here again the analogy with selling forces of commercial concerns becomes striking.

We must have a detailed field force. We must have a force which will personally reach every farm whose sanitary condition we would improve. While all local health organizations have this end in view, and the individual physician constitutes a powerful force, even these must be aroused to their opportunities, must be educated and stimulated as much as our lay constituency. They correspond, in the analogy we have drawn, to the trade for the regular distribution of our product. We have not created the need for the product until our detail man has visited the consumer.

The effort to meet the need for detail work, especially in connection with hookworm in Virginia, has resulted in the appointment of what we call the rural district inspectors. Each rural district inspector is assigned to an area of four or five counties, conveniently located and accessible from some one point as headquarters. This district inspector is the detail man in our selling campaign. He goes into the district and visits first the physician, taking with him his microscope, his literature and a small amount of properly prepared medicine. He is a graduate physician, qualified to practice medicine, but his whole time is devoted to the work and he is allowed to accept no fees. On his visits to the individual physician he interests him in the hookworm disease, diagnoses a few cases for him, and treats several in order to be sure that the physician is thoroughly acquainted with the practical details of the work he is going to be called on to do. Then, with the cooperation of the physician, working in the practice of one physician at a time, he visits the individual farm, talks with the head of the family, or better still, with the mother, points out the children who are probably infected, gets specimens, leaves literature, suggests treatment and refers them to the family physician. In this way, within a comparatively short time, he has covered the territory of the physician with whom he is working, has secured a few object-lessons of treatment, has prepared the physician to take care of the cases when they come, and has started the current toward the physician. He also inspects schools, gives public lectures and demonstrations, and, in general, agitates the question until everyone in the community is thoroughly acquainted with the facts regarding the disease.

The detail work so far has been very successful. The patients who are treated recover so rapidly and exhibit such marked improvement as to constitute an unanswerable argument for the truth of the contentions of inspector and physician as to the importance of the disease.

The whole community rapidly becomes interested in the subject; the worst cases are soon treated, and the mild cases come later; and with the spread of the truth regarding the prevalence of the disease and methods of its spread comes the desire for better sanitary conditions.

The amount of territory which can be covered by an active man in this way is very large, and, though we have not exactly determined it, we estimate that four or five badly infected counties can be cleaned up in a year's time, and that then the inspector may be moved to a fresh district. In this way four or five years should see Virginia thoroughly canvassed for hookworm disease, and the extirmation of the disease should be in the way of accomplishment.

The work in connection with hookworm will undoubtedly yield an extra result in typhoid fever equal in value to that from hookworm, and we believe that the successful carrying forward of the present campaign will result in a marked reduction in rural typhoid. In addition—and by no means least important—the demonstration of the practical benefits of systematic and scientific work in rural districts afforded by a successful campaign of this character will place preventive work on a new and firm basis before the country people, and should render the systematic and permanent extension of this work, embracing all diseases, easy of accomplishment.

We believe, therefore, in conclusion, that present rural sanitary conditions must not be allowed to continue; that the problem must be attacked in detail; that detail work will yield tremendous benefits both in contribution to our present knowledge regarding the transmission of many diseases and in the actual prevention of thousands of unnecessary cases of preventable diseases.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. LONG AND FREEMAN

DR. CHARLES W. STILES, Washington, D. C.: The center of the hookworm problem is, of course, the farm. I would like to touch on the next point geographically in the distribution of the disease, namely, the cotton-mill village, its sanitary conditions and the proportion of distribution from that point.

It should be recalled that many of the mills send out to the farms and bring the families in to work in the mills. Many of these families have never used a privy before going to the mills. For these families, therefore, almost any thing in the shape of privy is to be viewed as a sanitary improvement in their surroundings. Many of the families not only are unaccustomed to a privy, but are opposed to it. I have seen families which actually had to be "housebroken" to the use of a privy. Such persons will even stool on the floor, rather than use an outhouse. I have seen the effects of this dislike, and, further, mill managers have repeatedly told me of the difficulties with which they have to contend in order to stop promiscuous defecation. I know of at least one cotton-mill which starts its families in certain houses on the outskirts of the mill village and doesn't move them into better-situated houses until after some few months, or a year or more, when the families have become less dirty in their habits. That these families will spread hookworm disease through promiscuous defecation is self-evident. It may, therefore, be taken for granted that some hookworm disease does actually spread in this way, in some of the mill villages of the South.

DR. MARSHALL LANGTON PRICE, Baltimore: Human sewage is a particularly dangerous class of waste material which like many other waste materials may be classified as a nuisance dangerous to public health if disposed of in a manner whereby it may give offense or danger. Like other nuisances it may be dealt with under the common law, either by civil suit or by injunction proceedings. Statutory remedies are not always superior to those afforded by the common law. It is well, therefore, to consider first what remedies the common law affords against the dangers of sewage disposal and especially of privies. Human sewage may under certain circumstances become a nuisance under the common law on two grounds: (1) offensive character; (2) danger to public health. Since the common law is not fixed, except by a few well-established precedents, but fluctuates with public opinion, knowledge and experience, and in particular with the interpretation placed on these various factors by the superior courts, it is important that these courts should declare the deposit of sewage on an exposed surface or its discharge into a stream of insufficient volume a nuisance *per se*. Decisions of this kind in regard to other far less dangerous nuisances have been made by various superior courts.

Thus the Maryland Court of Appeals decided in the case of Woodyear vs. Schaeffer—a suit on petition for an injunction—that the discharge of blood from a slaughter-house into a stream was *per se* a nuisance and as such to be enjoined. Since remedy by common law is often clumsy, slow and inadequate, statutory regulation becomes necessary, and the question then arises of the best method of statutory control of sewage disposal. Certain general powers are granted to all sanitary departments of the government under which the question of sewage disposal could be reached but the problem is so very important that specific statutes should be everywhere enacted and enforced. It would appear proper and logical to leave the enforcement of these statutes to local sanitary governments, subject to regulation by the central authority.

In Maryland I introduced into a local sanitary law the first specific provision relative to sewage disposal in effect in that state. The provision authorized the county commissioners to pass rules and regulations to govern the disposal of urinary and fecal matter within the county. The county commissioners have not yet passed regulations under the act, but after we have studied the problem carefully in the state and the necessity can be shown, they undoubtedly will adopt such regulations under proper advice. It appears, considering the weakness of local sanitary government in many states, that the best way to deal with this problem is to allow local authorities the power of adopting rules and regulations governing sewage disposal and make them subject to revision by the central authority. We are also very much in need in all of our states of a method of procedure like the local government board in England. Where the sanitary authorities are weak, state authorities should have and should exercise the power of superseding the local sanitary government and carrying out, themselves, the necessary measures of intervention.

DR. JOHN L. JELKS, Memphis, Tenn.: Dr. Stiles visited my city not long since and saw a case of amebiasis, in which he suspected hookworm. I found myiasis, which induced me to prepare another paper on dysentery, the title of which was "Have You Dysentery? Bell Your Flies." In my chapter on dysentery in Hirschman's book, and in previous papers, I have referred for several years to the crime of polluting gardens and truck-farms with excreta. In a paper read before the Tennessee State Society in April, I reported cases of skin lesions associated with amebiasis, and then presented before that society a case of pellagra in which I found the *Entamœba histolytica;* I presented an opinion that there probably was an etiologic relationship between pellagra and this and other parasitic intestinal infections, such as amebiasis and uncinariasis.

For two years I have been alluding to certain skin manifestations or complications of amebiasis. I have made about one thousand examinations, microscopic and proctoscopic, during the last ten or twelve years. In this period I have found only three hookworm cases. I have observed during this same period about five hundred amebic cases. All of these but three were among white people; most of them were in males. I have observed one case of myiasis; I have observed two cases of pellagra. In one of these pellagrins I was permitted to make microscopic and proctoscopic examination, and I found the *Entamœba histolytica*, the other has not permitted proctoscopic and microscopic examination. Professor Andre refers to skin manifestations of muco-membranous colitis. I reported six cases yesterday, and previously, last year, reported three cases. Professor Andre's cases, I judge from his own description, were amebic. I have observed associations between pellagra and parasitic infections (hookworm and ameba), and I have seen skin lesions in a number of chronic amebic cases. Bass finds good evidence that pellagra is of protozoan origin, in that the Wassermann test is positive.

If preventive medicine is worthy of our nation's effort, if prevention of hookworm is worthy a philanthropist's million, may we in the delta and alluvial districts not share his and the nation's magnanimity in preventing a more serious and prevalent infection in the alluvial valley of the Mississippi?

DR. C. C. BASS, New Orleans: I don't want the idea and theory advanced by Dr. Long's paper to go unchallenged and unquestioned. I believe that, answering the question of amebiasis it is only necessary to call on those who have examined large numbers of specimens, and large numbers of patients, for amebas. We should remember that the *Amœba coli* are non-pathogenic, do not damage the intestinal canal at all, and that they are far more numerous, and the dysentery amebas are far less numerous. In institutions the water-supplies of which becomes infected with amebas, especially with *Amœba coli*, the majority of the patients are likely to be infected. Unless we examine at the same time a corresponding number, or a much larger number, or other individuals in the same institution or from the same source, the presence of amebas in the stools of pellagra patients in such institutions would not throw much light on the possible etiologic relation of amebiasis to pellagra.

With reference to the presence of hyperacidity of the feces noted by Dr. Long, we must remember that in the presence of any lowered condition of vitality, such a condition as obtains for days, weeks and months before patients die of pellagra and actually has already obtained by the time the patients show any symptoms by which we can diagnose the disease, their vitality, their resistance to intestinal infection, bacterial

or protozoan is very much lowered. This would increase the acidity due to bacterial growth.

We must remember also that one factor appears certain as a cause of pellagra, though there are more than one, probably several causative factors. I believe I can show, with some pictures I have, that exposure to sunlight is absolutely one of the factors in the production of the skin symptoms of pellagra. The skin lesions are usually minor and terminal symptoms of pellagra are seldom the important early symptoms of the disease.

In one instance an insane woman had a peculiar habit of keeping one hand in her bosom all the time, while the other one was exposed to the sunlight. The exposed hand developed pellagrous lesions; the other remained absolutely free. In another instance a woman wore a finger-ring on one finger on each hand. A short time after she had developed the disease she pulled the ring off from one finger and continued to expose herself to the sunlight for the benefit of her health, taking buggy rides in the sun. She continued to wear the other ring, until she was sick with a well-developed attack of pellagra. When first seen by me she had a perfectly clear, normal skin under the ring; the remainder of the hand presented a severe form of pellagrous skin lesion.

DR. JAMES W. BABCOCK, Columbia, S. C.: I think that we are all under a debt of much obligation to Dr. Long for his paper, and particularly for emphasizing once more the importance of the presence of amebiasis in pellagra, and furthermore for the observation of the deposit within the spinal foramina, thus giving another theory to explain the presence of the skin lesions.

I think most of us who have studied pellagra for any length of time are beginning to realize that we are dealing with a big problem. The trouble is that each one of us approaches the subject from too narrow a viewpoint. The dermatologist sees in the condition purely a dermatologic condition; the asylum man sees in it insanity, and so on; and each one approaches this big subject in too narrow a way. The observation of parasites in pellagra is an old one, established long ago in almost all the cases that were admitted to the Cairo (Egypt) asylum. Allen, of Charlotte, N. C., last fall demonstrated the almost constant association of amebiasis with cases of pellagra in his section of the country.

I have an associate who sees in pellagra merely an expression of the hookworm disease; and the positive denial by Dr. Stiles that he had ever seen this expression of the hookworm disease does not satisfy this friend of mine at all; it is probable that pellagra and ankylostomiasis will to him always be synonymous. Reference has been made to Dr. Bass' observation of the Wassermann reaction in pellagra. In connection therewith, I think it should not be forgotten that Dr. Howard Fox of New York has studied 30 cases of pellagra with the Noguchi modification and failed to establish the presence of the Wassermann reaction, so we have two observations—one pointing to the presence of a parasite and the other denying it.

Sir Patrick Manson mentions the presence of intestinal parasites in a condition similar to pellagra and warns observers not to associate these conditions as of cause and effect. Manson in the fourth edition of his "Tropical Diseases" says: "The novice in tropical medicine will be greatly puzzled over these cases of beriberi. If he examines the blood of these patients; possibly in a proportion of them he will find *Filaria nocturna* or some other blood worm. Very likely he will then think that the cases are forms of filariasis, and he may construct theories to explain how the filaria produces the symptoms. In some countries, in nearly all cases, he will find the ova of the *Ankylostomum duodenale*. On this evidence he may conclude that these are cases of ankylostomiasis. He had better, however, not commit himself to such a diagnosis until he has ascertained how it fares with the rest of the population as regards these parasites, for he will find that the ankylostomum and the filaria are quite as prevalent outside as inside the hospital and in the healthy as well as in the sick."

It is very important in the treatment of pellagra to remove these various parasites, but I think we shall find out in the end that the removal of the parasites does not *per se* cure the pellagra.

DR. SENECA EGBERT, Philadelphia: I would like to emphasize the point Dr. Price has cited about the matter of control. From our experience in Pennsylvania I believe it will pay any of the commonwealths in the south, or anywhere else for that matter, to have enacted a very strict and comprehensive health law, and then, if they can, get a commissioner that has nerve enough to enforce the act wisely and conscientiously, appointing under him county and other local health inspectors. I was very much interested in Dr. Freeman's talk on the work of the county or the farm inspector, for that seems to me an admirable way of carrying out what I was talking about this morning—the matter of popular education—and also to attain our object of improving public health.

We in Philadelphia are interested in this matter of pellagra because, I am told, we have had some cases of the disease in our city hospital, although I have not personally seen them. But you have typhoid fever in the south, as well, and if you can get rid of that at the same time that you are getting rid of your hookworm and your pellagra your gain will be so much the greater.

It seems to me that with the kind of work that is being done by the City of Richmond, and by Virginia, in sending out live, intelligent, up-to-date men who go out into the rural districts and show the people about these diseases and also show them how to rely on the talk of the local doctor, we have the popular education which is needed as a basis; and then with a proper set of health tracts for general distribution and with increasing work, it seems to me your problem down there in regard to the hookworm, pellagra and all of these troubles—typhoid not the least of them—is going to be, not easy of solution, but capable of solution within a shorter time than you or we, perhaps, anticipate.

DR. JOHN D. LONG, Washington, D. C.: My paper may sound misleading as to my intent. The work is somewhat different from any work that has been done in pellagra before, and for that reason I wish to say that I do not mean to pretend or assume in any manner that the pellagra question is solved. I am simply giving the hypothesis on which I worked in Columbia and an outline of the studies that were carried out in accordance with a working hypothesis.

DR. CHARLES W. STILES, Washington, D. C.: I believe in a license system for the privy. Certain of the southern towns (Chapel Hill and Richmond) at present charge householders about $5 per year license for every privy. The town then furnishes the disinfectant and pails and does the cleaning, the expense for which is covered by the license fees. It seems to me that that is a very excellent system. We must come to the point of view that the privy, despite the fact that "privy" refers to "private"—is not a private institution but a public institution. I believe also in the compulsory privy law which is being introduced in certain southern localities; but there is one factor in the south which we must not overlook, and that is that after we have the sanitary privy introduced we have an element in the male negro population which is going to be difficult to control. The white women now are using the privies when they are present; it will not be a difficult proposition to get the white men to use them; many of the negro women are using them; but it is going to be a very difficult task to teach the negro man to use them. I do not personally believe that there is any way to do this except by compulsion. Eventually we shall have to come to the standpoint in the southern states that an insanitary act means a service on the chain-gang; and eventually, I think, the chain-gang will be the school of cleanliness for the male negro.

DR. ALLEN W. FREEMAN, Richmond, Va.: We have solved an exceedingly distressing condition in Richmond, Va., as regards the privies. We had three years ago some 5,000 open privies, a great many of which were never cleaned at all; they were mostly in territory which had only recently been annexed to the city. Dr. Levy, the health officer, with his customary energy, had an ordinance passed requiring every privy in the city to be rebuilt in accordance with standard specifications which were drawn up and printed. Within six months some 5,000 privies were built or remodeled. They are cleaned

regularly by a city officer. The cost of cleaning is a charge on the property and is collected just like any other tax. I am glad to say that the reduction in typhoid following this procedure was immediate. This reduction did not follow an enormous amount of work on the milk-supply, on other foods and on the individual cases to secure the disinfection of infectious material at the bedside. The typhoid death-rate, which had never been below 44 per hundred thousand per annum, dropped last year to 24; and we hope to see it go still lower.

CERTAIN LEGAL ASPECTS OF DOMESTIC QUARANTINE*

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The word "quarantine" was originally used to designate the forty days of Lent. Then it was applied in the English law to the forty days after the death of her husband, during which a widow had the privilege of remaining in her husband's mansion house, and during which time her dower was to be assigned. Next we find the term employed with reference to the forty days during which a vessel might be detained without intercourse with the shore, after arrival from an infected port. After it was learned that forty days' isolation was not invariably necessary, the original signification was dropped, and the word came to refer only to the isolation of the vessel. The same idea, and the same methods, applied to protection at a land frontier; and later to the isolation of persons, or places contaminated with infectious disease. It is interesting here to note that syphilis was a subject of land quarantine in Europe during the earlier years.

The present domestic quarantine is no more anomalous as to original signification, than it is as to either law or science. We know well that in the case of yellow fever, for example, it is far less necessary to prevent intercourse between the patient and healthy individuals, than it is to exterminate the stegomyia mosquitoes. A typhoid patient is not properly isolated if his discharges are thrown into the public sewage system before disinfection. The complete disinfection of those discharges must be an integral part of such quarantine, yet that fact is not generally realized by the citizens of this country. As to the legal side, we have made practically no advance in the last hundred years. Neither the rights nor restrictions of either state or individual, are much more clearly recognized to-day than they were when this nation was born. Just as in industrial pursuits, to preserve the same general line of action, we must alter our methods to conform to recent scientific advances, so in law we must alter our statutes and institutions, to conform to the decisions and discoveries of a progressive people. Fundamental law must be flexible, and change in form according to conditions. Is it not time that our archaic practice as to quarantine should be critically examined and revised?

The first step from absolute monarchy is the establishment of institutions. Institutions may be safeguarded by constitutions. Though ours is a constitutional government, there are certain institutions which have survived which are more dictatorial than constitutional, and quarantine is one of these. It overrides all constitutional rights. Though we are supposed to have guaranteed to us the right of liberty, any person may be imprisoned by a health department, without a previous trial, and without even having a formal complaint lodged against him. Is a retail merchant a criminal simply because a patient suffering with a mild form of smallpox happens to come into his store to make a purchase? Yet such a dealer may have his store closed, and be himself imprisoned, and he is practically without redress.

It is well recognized that the greatest liberty for the individual, as well as the greatest safety for the nation, is to be found in the observation of constitutional provisions. Whenever two courses are open it is our duty therefore to take the constitutional route. It is sometimes necessary, however, to suspend constitutional protection. Thus when the spirit of anarchy settles on a community, and a mob rules a city, the slower operations of ordinary law are unable to cope with the danger, and martial law must be declared. So too, a man's house is his castle, and the stranger may not enter without permission; neither must he take therefrom aught which is not his own: but when the house catches fire, no portion is so private that those who are fighting the fire are restrained thereby. It is contrary to both constitutional and statutory law to kill a human being: but "self-preservation is the first law of nature," and it is not deemed criminal if the killing be in self-defense, or, as in the case of a policeman in the line of duty. Self-preservation on the part of the community may demand the imprisonment, either at home or elsewhere, of an individual afflicted with, or exposed to, an infectious disease. If the ordinary liabilities were more clearly defined in the statutes, and the duties of health officials were thus definitely prescribed, much possible opposition would thus be removed, and even in those occasional extraordinary emergencies when it is necessary for the health officer to take martial command, he would have more of the confidence of the citizens, and more active support. The present system is unconstitutional, un-American and despotic in many states. Whether the powers are used for good or bad, whether as a help to the community, or a means of oppression, depends entirely on the individual officer. It is true that the power is seldom abused, but we must remember the possibility. During the old Tweed régime in New York City we are told that the health department was systematically used as a tool for collecting blackmail.[1]

There is another form of abuse of sanitary authority which is more or less common. It forms an argument against boards of health, as compared with health commissioners; and it is an evidence that health officials should not be engaged in private practice. Here is an illustration: A widow in Clark County, Illinois, sold milk in a neighboring village. Her son came home from Brazil, Indiana, sick with typhoid fever. The mother nursed him, still continuing in the milk business. The local board of health consisted of three physicians, unpaid. One of these was the attendant on the typhoid patient. Knowing that the widow was dependent on her business for support, he was reluctant about forbidding her to sell the milk. The other members of the board hesitated to act, lest their motives might be misunderstood, and jealousy charged. After some thirty cases of typhoid had occurred on her route, the sale of milk was stopped, and no further cases occurred.

It is true that we have at present a check on the abuse of the power now possessed by health officials, in the form of court supervision, but that check may very easily

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. Autobiography of Andrew D. White.

prove a source of annoyance, or oppression on the health departments, and the ends for which they are created be thereby defeated. For example: Suppose that the members of a household are quarantined for malaria. Every sanitarian knows that in the presence of the anopheles such a family is a source of danger to the community, and the individuals should be restricted as to liberty. It would not be difficult, however, in most communities to find physicians who have the respect and confidence of the citizens, and who would deny in court the relationship of mosquitoes to the disease, and who would assert that malaria is not infectious like yellow fever, but that it is due to some indefinite miasm which is present in certain localities. Under such conditions it would not be strange if a judge should decide that the disease is not infectious, and he might even render a judgment for damages against the health officer. In the absence of statutory provisions to the contrary, the opinion of one physician is as good in law as that of another, and a health officer is only a physician under such conditions.

The three great objects of government are: The maintenance of national existence; the maintenance of right or justice; and the public welfare.[2] Health departments have to do with each of these objects. Their powers are of the nature technically called police powers. While the Federal government may exercise certain of the functions of health administration in the United States, *authority* of action rests in the individual states. Certain powers may be delegated by the states to the municipalities. These delegated powers are always subordinate to state action. Thus, among the powers of cities and villages granted in the statutes of Illinois we find:[3] "Sixty-seventh.—To appoint a board of health, and prescribe its duties;" and "Seventy-eighth.—To do all acts, make all regulations, which may be necessary or expedient for the promotion of health, or the suppression of disease." Acting under these provisions the City of Chicago passed an ordinance making vaccination obligatory as a requisite for attending the public schools. The Supreme Court, however, in Jenkins *vs.* Board of Education,[4] held that the legislature of the state had not made such a requirement, and that it had not delegated the power to do so to the city.

In order more perfectly to control the collection of manure in the City of Chicago, an ordinance was passed and a contract made, after advertising for bids. One Landberg, who had made a business of collecting and selling such manure, was thereby thrown out of his occupation. He objected, and the Supreme Court found the ordinance unconstitutional, on the ground that it created a monopoly, and interfered with legitimate business. The city may regulate such occupation, by license or otherwise, but it may not, without specific power granted by the legislature, create monopoly, or destroy a private enterprise.[5]

McGehee[6] holds differently, saying: "The property interests in the noxious materials must be subordinated to the general good." He refers to California Reduction Co. *vs.* Sanitary Red. Works, 199 U. S., 306, and Gardner *vs.* Michigan, 199 U. S., 325.

In these cases the matter of monopoly was distinctly considered as well as the interference with private business. Both of these cases were mentioned in the brief of the attorneys in the Landberg case. Since these decisions were from the highest court in the land, it seems strange that in differing from the Federal court the Illinois court did not specially mention these decisions in its opinion. It is the contention of the Chicago Department of Health that the present method does injure the community, and that the method proposed in the ordinance was necessary to safeguard the interests of the citizens.

The general rule governing such matters is thus stated by Freund.[7]

Under the principle of local self-government local authorities cannot be vested with powers necessarily exceeding their territorial jurisdiction; those matters therefore which equally affect the people of the state at large, and cannot be confined locally, must be reserved to the state legislature. Moreover, the inauguration of a novel policy in matters of safety and health, the prohibition of articles of consumption possibly but not undoubtedly injurious to health, the establishment of monopolies, the restriction of the right to pursue established avocations, may under circumstances be conceded to the legislature of the state, but cannot be introduced by local authorities under mere general grants of power.

Such a limitation of municipal power is reasonable. If left to the individual municipalities, confusion, and lack of protection is likely to arise, and local feeling may lead sometimes to excess of reasonable action. Thus adjoining municipalities may establish very different regulations as to quarantine. It is necessary, therefore, that there be a general supervision, and coordination.

In spite of the delegation of powers to cities and villages in Illinois, as cited above, we find that as amended in 1907 the Revised Statutes,[8] say of the State Board of Health that it "shall have supreme authority in matters of quarantine, and may declare and enforce quarantine when none exists, and may modify or relax quarantine when it has been established." Such a provision would be all right if it were made more definite, but there is nothing in the statutes making it requisite on any one to report infectious diseases to any one, specifying what diseases are to be quarantined, or defining in the least how, or to what degree such quarantine is to be exercised. It puts into the hands of the executive of the board almost unlimited power. Some time ago in a dairy district supplying Chicago with milk, families were quarantined for scarlet fever. A representative of the state board appeared and abolished the quarantine. If the law is constitutional, he had the undoubted legal right to do so autocratically. There was no appeal.

It is possible that such a law as that just mentioned might be declared by the court unconstitutional, for the reason that it gives to a man or body of men, an arbitrary power, without limitation, and violates the provisions of the fifth and fourteenth amendments to the Federal Constitution. Health boards, and officers, have only executive power. They must not act in a legislative capacity. There is nothing in the statutes of the State of Illinois which limits quarantine of human beings to infectious, or contagious diseases. Though animals afflicted with contagious diseases are especially mentioned in the statutes, and provision is made against the spread of hog cholera, glanders, and cattle fever, so far as the state statutes are concerned human beings are permitted to communicate their diseases to others with impunity. On the other hand, there is nothing in the statutes which would prevent the state board of health, through its executive officer, from quarantining a man afflicted with any disease, nephritis for example, though

2. Freund, The Police Power, Sec. 4.
3. Chapter 24, Art. V, and Section 62.
4. 234 Ill., 422.
5. Landberg vs. City of Chicago, 237 Ill. 112.
6. Due Process of Law, p. 336.
7. Police Power, Sec. 142.
8. Chapter 126a, Sec. 2.

the common law practice might prevent such action. Still court action is not rapid, and a corrupt politician might thus gain the temporary seclusion of an opponent.

As set forth by Prof. Goodnow[9] there are three ways possible by which a nuisance may be determined; by the common law, by legislation, and perhaps by executive action when so authorized by legislative enactment. In common law, the courts are supreme, and boards of health have no power to enlarge common law nuisances. Smallpox is a common law nuisance, but malaria is not. As to the right of legislatures to enact such laws, there is no question. The restrictions on boards of health, or health officers, are not so generally recognized by sanitarians. In the most excellent decision of Pott *vs.* Breen,[10] the Supreme Court of Illinois said of the State Board of Health:

It had and could have no legislative power. Its duties were purely ministerial, and the provision of the statute authorizing the board to make such rules and regulations as it should from time to time deem necessary for the preservation or improvement of public health cannot be held to confer that broad discretionary power contended for.

And:

We are of the opinion that the powers of the board are limited to the proper enforcement of the statutes, or provisions thereof, having reference to emergencies requiring action on the part of the agencies of government to preserve the public health and prevent the spread of contagious or infectious diseases.

And again:

Its duty to recommend legislation is repeated more than once in the act in connection with specifications of the powers and duties of the board.

The Supreme Court of Wisconsin gave a similar opinion in State *vs.* Burge.[11]

The Minnesota Supreme Court, in State *vs.* Young,[12] said:

It is a principle not questioned that, except where authorized by the constitution as in respect to municipalities, the legislature cannot delegate legislative power—cannot confer on any body or person the power to determine what shall be law. The legislature only must determine this.

So we find in Dowling *vs.* Insurance Company[13] that it was an unconstitutional act when the legislature attempted to leave to the insurance commissioner the decision as to what form of a policy must be used. So too in Schaezlein *vs.* Cabaniss[14] it was illegal to leave to an executive officer the power to determine the particular form of appliance which should be used in factories to limit the dangers therein, and making it compulsory on the owners to comply with his orders.

Freund summarizes:[15]

It cannot be left to an administrative officer to determine conclusively the existence of a danger, and the choice of measures to be taken against it, since that would involve an unconstitutional delegation of legislative power.

The fifth amendment to the Federal Constitution provides that no person shall "be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation." The fourteenth amendment says in Section 1: "No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any state deprive any person of life, liberty, or property, without due process of law."

What is "due process of law?" Pomeroy says:[16]

Due process of law implies primarily that regular course of judicial proceeding to which our fathers were accustomed at the time the Constitution was framed; and, secondly, and in a subordinate degree those more summary measures which are not strictly judicial but which had long been known in the English law and which were in familiar use when the Constitution was adopted. These summary measures generally, though not universally, form a part of that mass of regulations which many writers term "Police," and which relate to the preservation of public quiet, good order, health, and the like. . . . The summary measures which may form a part of due process of law are those which have been admitted from the very necessities of the case to protect society by abating nuisances, preserving health, warding off imminent danger, and the like, when the slower and more formal proceedings of the courts would be ineffectual.

In Murray's Lessee *vs.* The Hoboken Land Company,[17] Mr. Justice Curtis says:

Though due process of law generally implies and includes actor, reus, judex, regular allegations, opportunity to answer, and a trial according to some settled judicial proceedings, yet this is not universally true. There may be, and we have seen that there are, cases under the law of England after Magna Charta, and as brought to this country and acted on here, in which process in its nature final, issues against the body, lands and goods of certain public officers without any such trial.

Due process is not necessarily judicial process.[18] The term, therefore, is now frequently applied to legislation, the underlying principles being that all persons interested may have an opportunity of being heard, and that the legislation does not represent arbitrary acts of government.[19]

An arbitrary statute is not due process.

The just cause of legislation is the legitimate function of government. A statute not supported by such cause is not due process.[20]

Practically the present system of judicial control over legislation has meant in many cases that unless all three departments of government are convinced of the justice and reasonableness of a radical change in social or economic policy it cannot become embodied in principles of law.[21]

A recognition of these principles, in the place of restricting the liberty of action for health officials, really increases their power. A man walking on uncertain ground must go carefully. When assured of its safty, he may step boldly and with speed. If the infectious nature of a disease is not legally established, no matter how sure the official may be, he is liable to be blocked by *habeas corpus* proceedings. He must then establish before the court the correctness of his diagnosis, the infectious nature of the malady, and that the measures taken are both reasonable and necessary. If he fails to satisfy the court on every point, the case is lost.

General rules and regulations have not the same standing as statutes.[22]

Such rules and regulations should only be issued in conformity with the clear and evident intent of the

9. Columbia Law Review, II, 203.
10. 167 Ill., 67.
11. 70 N. W. Rep. 347.
12. 29 Minn. 551.
13. 92 Wis. 63.
14. 135 Cal. 466.
15. Police Power, Sec. 34.
16. Constitutional Law, Sec. 246.
17. 18 Howard 272.
18. Rectz vs. Michigan, 188 U. S., 507.
19. Johnson, J., in Bank of Columbia *vs.* Okley, 4 Wheaton, 235; also People *vs.* Smith, 21 New York 595, and People *vs.* Adirondack R. Co. 160 New York 225, affirmed in 176 U. S. 335.
20. Freund: Police Power, Sec. 20.
21. Freund: Police Power, Sec. 21.
22. Health Dept. *vs.* Knoll, 70 N. Y., 530, and also Reed *vs.* People, 1 Park Cr. 481.

statutes. In Kirk *vs.* Wyman, *et al.*,[22] before the Supreme Court of South Carolina, we find this statement:

> From this it follows that boards of health may not deprive any person of his property or his liberty unless the deprivation is made to appear, by due inquiry, to be reasonably necessary to the public health; and such inquiry must include notice to the person whose property or liberty is involved, and the opportunity to him to be heard, unless the emergency appears to be so great that such notice and hearing could be had only at the peril of public safety.

In this case the court held that the health department exceeded its authority in removing a case of anesthetic leprosy to a pest-house. Sanitarians would agree that typhoid and malarial fevers are infectious, dangerous to the community, and legitimate objects for some form of quarantine. These facts have been recognized for some time. However, for a board of health, or a commissioner of health so to declare, or rule, would in fact be an act of legislation exceeding his authority. It would be giving neither due notice, nor opportunity to be heard. The quarantine of such a case could hardly be justified on the ground of an emergency, for the general conditions have long been known, without any attempt on the part of the executive to secure proper legislation. The case of epidemic poliomyelitis might be different. The disease has generally been considered non-infectious, and therefore not a proper object for quarantine. The fact has only recently been demonstrated that it is infectious. The statutes should be sufficiently elastic in construction to permit health officials under such conditions to control and quarantine such a disease until such time as the legislature could reasonably be expected to act. If the health executive has placed the facts properly before the legislative body the responsibility rests on the law-makers, and the executive no longer has the right, in the absence of new facts, to declare such a disease quarantinable. So too, some well-known disease, which there seemed no reasonable probability would ever enter the particular community, might not have been mentioned in the statutes, and its appearance would constitute an emergency. In the case of Jenkins *vs.* Board of Education[24] it seems that the Commissioner of Health had issued orders declaring smallpox epidemic. The court held that he had exceeded his authority.

> There is nothing in the nature of an emergency in the occasional recurrence of the well-known disease of smallpox in a city like Chicago, which may not be provided for by general rules and regulations prescribed by the legislative authority of the city.

It must be recognized that in all these litigations the health department runs the risk of defeat, and so of loss of prestige; and that even when the final decision is on the side of the health service, adverse decisions in the lower courts involve loss of time as well as expense.

The statutes of the states are generally silent on the authority of diagnosis, and in the cases which have come to court there is some difference of opinion. An infectious disease is a nuisance. In Kenedy *vs.* The Board of Health,[25] it was said:

> The determination that a thing is a nuisance is final under the Pennsylvania statutes, and in a suit to collect expenses or abate the nuisance the defendants could not offer evidence to show that there was no nuisance.

23. S. E. R., 387.
24. 234 Ill., 427.
25. 2 Pa. St. 366.

In Brown *vs.* Purdy,[26] as to a question of the diagnosis by the health officer, it was held:

> If there was any case for his judgment, or any fact or appearance or symptom as to which a question of smallpox or not could arise, his determination was final as to the legality or propriety of removal.

On the other hand, in Miller *vs.* Horton,[27] a board of health was held liable for the killing of a horse, at the order of the commissioner of contagious diseases of animals, who had decided that the horse had glanders. His diagnosis was disputed in court by unofficial testimony, and the court took on itself the responsibility of deciding that the horse did not have glanders. If the responsibility of diagnosis is not placed on the health officer, it must be remembered that the legal diagnosis must be made by the court, which is not supposed to have a medical education.

It will be noticed that in Brown *vs.* Purdy there is another question, namely, the authority of the health officer to remove a patient afflicted with an infectious disease. In Maine a police officer and the city physician, acting under the direction of the mayor of Bangor, after seeking a more peaceable entrance, broke into a house, and took a child sick with smallpox out of its mother's arms, to a hospital. Action for trespass was dismissed, because the statute permitted health officers of a town in which a person was affected with a disease dangerous to the public health to remove such a person to a separate house; but the court called attention then to the fact that such power must be clearly given in the statutes.[28]

In an early case in Maryland,[29] the court held that the health officer must send a patient to the hospital if in his opinion such a course were necessary, and it further held that the health officer alone could decide how much it was necessary to do, and the captain of the boat on which the smallpox had been found must pay the bill. It is doubtful if a court to-day would go so far. In State *vs.* City of New Orleans,[30] the legislative power of the state to decide where smallpox patients were to be treated, was upheld. As opposed to the authority of the health officer to remove a patient against his will, in Boom *vs.* City of Utica,[31] the court said: "A person sick of an infectious or contagious disease in his own house, or in suitable apartments at a public hotel, or boardinghouse" is not a nuisance.

In Kirk *vs.* Wyman,[32] the court further uses this expression:

> Inasmuch as it is the province of the legislative branch to determine what laws and regulations are necessary to the public health, statutes and regulations made and measures taken under such statutes and intended and adopted to that end are not subject to judicial review; but the courts must determine whether there is any real relation between the preservation of the public health and the legislative enactment, or the regulations and proceedings of boards of health under authority of the statute.

There is an old adage: "In time of peace prepare for war." If we wait for an epidemic before the due process of law, we may find our hands occupied with the preliminary preparations, when we should be engaged on the firing line. That has been the experience in the beginning of most great epidemics. Due process includes the argument of the defense. Education is a portion

26. 8 N. Y. St. Rep. 143.
27. 152 Mass. 540.
28. Haverty *vs.* Bass, 66 Me. 71.
29. Harrison *vs.* Mayor of Baltimore, 1 Gill 264.
30. 27 La. 521.
31. 2 Barb. 104.
32. 65 S. E. R. 387.

of that due process. The education is not complete until a decision is reached. The decision may be in the legislature. If it is not there, it is likely that it will be in a court. For the benefit of each side the decision should be reached when time is not an important element. If the conclusions are definitely stated in legislative enactment, the fight in the epidemic will not be along the whole line, but in a limited section. On the other hand, in the absence of such definite statutory enactments, long usage may give a health officer a confidence which is unwarranted, and he may suddenly wake up, as the result of a court decision, to a realization of the fact that his method is illegal. Lieber[33] calls attention to the fact that institutions, though not viciously conceived, may become injurious. They may become hollow and like the empty boxes in an ill-managed house, become catch-alls for rubbish, and thus nuisances. McGehee[34] advises that, when in doubt as to authority, health officials have the matter determined in advance by the courts, for self-protection.[35] It matters not how desirable an object may be of attainment, if the method used is even slightly illegal, it should be abandoned, and a more just way found. In Potts *vs.* Breen,[36] the court admitted the advisability of vaccination, and pointed out the legal method of its attainment. In Boyd *vs.* United States,[37] Mr. Justice Bradley says:

Illegitimate and unconstitutional practices get their first footing in that way, namely, by silent approaches and slight deviations from legal modes of procedure.

A person who knowingly and willfully exposes another to infection is in fact a criminal and he is also liable for civil damages. Intentional wrongdoing is not necessary; all that is necessary to be shown is that due precautions have not been used.[38] To-day, many cases of infectious disease are kept hidden, through fear of placards, or of quarantine, or of loss of trade. In many mild cases no physician is employed for these reasons, and because the persons involved do not recognize their responsibility to the community. In this way not only is the danger to the community increased, but very often valuable time is lost, as in diphtheria, and the life of the patient is sacrificed by the delay. A statutory enactment is educational as well. The parent is no longer able to quote the conflicting theories of physicians, of whose relative authority and competence he is incompetent to judge.

Without considering the legal responsibility of the community to care for those quarantined; or the duty of the health service to pay for articles seized, or destroyed; or the liability of a community to those who innocently contract an infectious disease through the inefficiency of a health department; or the desirability of an enactment making school inspections obligatory; it is suggested that much of our present confusion, and possible inefficiency, will be relieved by securing certain statutory enactments.

First: The statutes should definitely specify certain diseases as infectious, and require that they be reported to proper officials.

Second: The hiding, concealing, or neglecting to report such diseases, or a suspicion of their presence, should be made a misdemeanor, punishable by fine or imprisonment.

Third: The knowingly or wilfully exposing a person to infection, through neglect of the principles of quarantine, should be specifically made a misdemeanor, and punishable by fine or imprisonment.

Fourth: The statutes should make it obligatory on health officials to maintain quarantine, and the minimum requirements of such quarantine should be stated. It must be recognized that the problems of a thinly settled community are very different from those of the densely populated cities, and power should be given to local authorities to make more stringent regulations in the form of ordinances. In such statutes it must be remembered that the essentials of efficient quarantine differ according to the character of the diseases.

Fifth: The legal status of disease carriers, especially typhoid and diphtheria, should be definitely stated. They should be obliged to report regularly to the local health officer (though not for treatment), and should by law be restricted from engaging in certain occupations, such as around dairies, or restaurants, or other places where they would be likely to spread the disease. No such person should be given a clear bill of health, until after examination by the legal guardian of the public health he shall be found free from evidence of disease.

Sixth: The diagnosis of the health official should be considered final, subject only to an appeal to his superior. In a recent case in California, in one of the lower courts, physicians were permitted to testify to fact, not expert opinion, in the diagnosis of disease. It was recognized that they used their expert training to make the diagnosis, but having made it, the court accepted it as fact, not opinion. There is no reason why a man should not testify that a disease is typhoid, more than that he should not testify that a certain animal is a horse. In the absence of such a declaration on the part of the legislature, the diagnosis of a competent health officer may be off-set in the courts by the testimony of an irresponsible private physician. Mistakes of diagnosis may occur, and private individuals be injured thereby, but the danger to the community will justify such a provision. *Salus populi est suprema lex.*

Seventh: In the case of an infectious disease it should be obligatory on the local health officer to give to the persons responsible for the care of the patient printed instructions, or orders, regarding the case, including the care of discharges from the patient, and violations of such orders should be punishable. Such instructions should not be left to the attending physician, unless he be official.

Eighth: Release from quarantine should be only on the signed permit of the official. School boards should not be permitted to accept such certificates from the attending physicians, unless they be official.

Ninth: Health officers should be obliged by the statute to keep as complete a record as possible of the circumstances of the infection, and trace, if possible, the source of infection, and the means of the communication. For legal, as well as scientific reasons, such a record should show the result of bacteriologic or blood

33. Civil Liberty, Chap. 26.
34. Due Process of Law, p. 374.
35. People *vs.* Board of Health, 140 N. Y., 1.
36. 167 Ill. 67.
37. 116 U. S. 616-635.
38. Heiland *vs.* Bridenstine, 104 Pac. R. 626, a physician was assessed damages for communicating gonorrhea by the use of unclean instruments.—Supreme Court of Washington sustained. A railroad ticket agent worked while suffering with smallpox. Passengers contracted the disease from him, and were awarded damages against the company (Court of Civil Appeals of Texas, approved M. K. & T. Ry. Co. *vs.* Raney, 99 S. W. Rep. 589).—Damages awarded against a city for typhoid fever from an infected public water supply (Milnes *vs.* Huddersfield, L. R. 10 Q. B. Div. 124).—According to The Engineering News, April 28, 1910, p. 906, the Civil Court, London Assizes, recently awarded damages to the amount of $2,430 against a milk dealer for typhoid fever contracted by a user of the infected milk. The principles are the same as those holding railway companies specially liable for injury to stock when the company neglects fences. Also see City of Pekin *vs.* McMahon, 154 Ill. 141, and the sheep case of Herrick *vs.* Gary, 65 Ill. 101.

examinations, and whether such tests were made officially, or by private practitioners.

Tenth: The statutes should give to the health officials authority to remove a person sick with an infectious disease to a hospital, or other suitable place for treatment and isolation. Such removal should be made discretionary, not obligatory.

Lastly, provision should be made for emergencies, and health officers should have certain liberty of action in the presence of danger, which is not provided against in the statutes.

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ABSTRACT OF DISCUSSION

DR. JOHN H. WHITE, New Orleans: There was a time when we were compelled to resort to regulations in health matters, rather than legislation, because of the very scanty knowledge we had of the methods by which the various diseases were diffused in our communities. Fortunately that time is passing. All legislation must be carefully framed so as not to bring the health officer up against a stone wall. There must be some loophole left for him to use discretion. The state from which I come practically entrusts its state board of health with the power to legislate—a power which is absolutely unconstitutional, and which will be thrown down any time that anybody chooses to take it into the supreme court, and leave the boards of health helpless to defend themselves, even though they have been doing exactly the right thing.

Dr. Hemenway's remark about the confidence that the health officer will have when he is backed by law and not by regulation appealed to me very strongly. He can go forward then, because his backing is in line with the law of the land. I have had some experience of my own; by depriving men of their liberty—imprisoning them in box-cars to keep them from disseminating yellow fever—with absolutely no law or regulation behind me, I have run the risk of being deprived of my own liberty; and I have done it so much that had I not passed the statute of limitation on this matter I would be rather afraid to live in the state now.

The health officer, in any community which is able to pay a health officer, should under no circumstances follow a private practice. No matter how honest a man may be, he will have an unconscious leaning, if nothing more, toward his own patients; he will feel averse to getting them into trouble. But in a country village that is utterly unable to pay the health officer more than $100 or $200 a year, the officer is obliged to resort to the practice of medicine, and the village must do the best it can.

The one thing that stood out as one of the most salient points to me, however, was this matter of the insufficient authority of the health officers and others, evidenced in our own work in immigration service, to make a diagnosis and to have it legally sustained. I have had the courts take away a case of trachoma on the evidence of men who said it was not trachoma because there was no law to say that the decision of the medical officer in that case was final. The plague was announced in the city of San Francisco; a judge on the United States bench declared from the bench that he had had evidence submitted to him sufficient to justify him in the assertion that there was no plague in the city of San Francisco and offered to put Kinyoun in jail for saying that there was plague in San Francisco. We can have no stronger evidence than that of the necessity of having law back of the health officer in every particular in which law can be substituted for regulation.

I know of many instances in which the law against concealment of disease by physician or patient prevented disaster in the endeavor to wipe out disease. Without the ability to force the unwilling to tell the truth, it is almost impossible to wipe out an epidemic in a community. With that ability, the health officer's hands are held up mightily. Such laws as Dr. Hemenway advocates, adroitly framed, leaving as much discretion to the health officer as is consistent with the constitution, and enacted in every state in the Union, would double the capacity of the health authorities for the extirpation of disease.

DR. W. A. EVANS, Chicago: If Dr. Hemenway will read the *Engineering News* for May he will find reference to a civil suit for damages when the act committed was selling milk, which spread typhoid fever. Health officers do not know enough law, and courts take peculiar views on health questions. The Jenkins and Landberg cases are in court. Each of these was decided on the facts and in neither were the facts before the court, or rather each was an expert opinion on the facts and neither witnesses as to the facts nor expert witnesses had been heard. All health department work is based on police power. No health case has had its day in court until the facts have been heard.

DR. W. F. SNOW, Sacramento, Cal.: Vaccination laws have been mentioned during this discussion. I received this morning a letter which states that the vaccination case in California was decided in favor of the State Board of Health. The district courts had decided that our compulsory law was unconstitutional on account of class legislation and that the State Board had no authority in the public schools—the decision as to when vaccination was necessary resting solely with school trustees. The appellate court has just reversed this decision of the lower court and declared the law to be constitutional. The state board now intends to proceed with its enforcement.

DR. HENRY B. HEMENWAY, Evanston, Ill.: The courts have certain methods of procedure which may hardly be gotten around; and the supreme court considers the questions of law, rather than the questions of fact.

VARIATION OF DOSAGE DEPENDENT ON THE METHOD OF ADMINISTRATION *

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This paper is merely a preliminary report intended to call attention to the necessity for the systematic investigation of the rate of absorption of different drugs after different modes of administration and the ratio of absorption to excretion and destruction, and also to one of the methods which may be employed in investigating the subject. Different drugs will require different methods of procedure, and in all cases various species of animals must be employed before we can transfer the results to man.

It is well known that the toxicity of certain drugs varies with the mode of administration, but the exact cause of this variation has not been studied sufficiently in many cases, though it is obvious that the therapeutic dose must usually vary in much the same way that the toxicity does. A large number of experiments will be required to determine the comparative activity of the various potent drugs administered in different ways, but until such determinations have been made with far greater accuracy than has been done with most of them, prescribing must lack that degree of precision which we are coming to demand in every branch of medicine.

It has been said that dosage is the most vulnerable part of therapeutics, yet the one on which the healing art

* From the Laboratory of Pharmacology of Cornell University Medical College. Presented at the International Congress of Medicine and Hygiene, Buenos Ayres, May 25, 1910. Certain facts presented in this paper were stated in a paper read at the meeting of the American Society for Pharmacology and Experimental Therapeutics, Boston, Dec. 29-30, 1909. These will be presented in greater detail in subsequent papers from this laboratory.

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mainly depends, and since the correct dosage depends on the rate of absorption compared to that of excretion and destruction, it is obvious that we should have a fairly accurate knowledge of these processes, but reference to the literature will show that our knowledge of the subject is fragmentary in the extreme.

Thus, many of the leading text-books on pharmacology are silent regarding the rate of absorption and excretion of such important drugs as digitalis, and the questions of the absorption, excretion and destruction of the various members of this group have been neglected almost completely by pharmacologists.

Maurel[1] has determined the fatal doses of numerous drugs for different animals by various modes of administration, but his experiments, with strophanthin at least, have little bearing on the therapeutic dose for man. Experiments made in this laboratory during the past three years show that the absorption of the different drugs belonging to the digitalis group from the alimentary canal of animals is very variable. The variability is extreme in the case of strophanthus and amorphous strophanthin as well as in that of crystalline ouabain, or the so-called crystalline strophanthin. The results obtained on animals are supported by observations made on man, and they tend to throw grave doubt on the value of many of the clinical observations made with strophanthus in the past, when the drug was administered orally.

Despite the want of systematic studies of these questions of absorption, excretion and destruction, there is an opinion, which is fairly widespread, that when one knows the oral dose of a drug one can compute the amounts suited for rectal and subcutaneous use by certain rules, but of course, no one denies that there are numerous exceptions to the rules given for the computations.

The following quotations, which might be multiplied almost indefinitely, illustrate what has just been said on this point:

Sollmann, "Text-book of Pharmacology," 1906, 2nd. ed., p. 134, states that "the rectal dose may approach very closely to the subcutaneous, especially with very active poisons. The hypodermic dose is about one-third of the oral dose."

Cushny, "Pharmacology and Therapeutics," 3rd. ed., 1903, p. 34, states: "*Hypodermic method.*—As a general rule about one-half of the ordinary amount is sufficient. *By rectum.*—The rate of absorption from the rectum as compared with that of the stomach and bowel is still a disputed point, and some physicians recommend that the dose be reduced to three-fourths, while others recommend one or one and a half times that given by the mouth."

The mere presence of a drug in the general circulation does not prove that the action is the same, quantitatively, irrespective of the way in which it was administered, but the physiologic action as a rule must be very nearly proportional to the amount present in the circulation at any one time, or in a unit of time.

Those drugs which are absorbed from the alimentary canal but which are destroyed in the liver before they reach the general circulation might as well remain unabsorbed, so far as their systemic action is concerned, and in our experiments such absorption has been disregarded, but no appreciable destruction of crystalline ouabain or amorphous strophanthin occurs in the liver of the cat or dog in the course of a few hours after the oral administration.

While the degree of dilution has a marked influence on the toxicity of certain poisons, such as strychnin, by subcutaneous injection,[2] this must be regarded merely as a question of alteration of the ratio of absorption to excretion and destruction, for we have found that the slow intravenous injection of strychnin permits of the administration of several times as much as is fatal when the injection is made more rapidly.

We must suppose that the dilution of most drugs must be maximal after the oral administration, since the slow absorption from the stomach and intestine permits of the distribution throughout the body tissues. Mere dilution appears to play no important rôle in the action of the members of the digitalis group, particularly when these are very slowly injected, as in our experiments.

METHOD USED IN ESTIMATING ABSORPTION

We found that the absorption of a slight excess over the minimal fatal vein dose of crystalline ouabain, amorphous strophanthin, digitalis, strychnin and some other drugs into the general circulation was followed promptly by death, after typical symptoms, regardless of the way in which these drugs were administered, hence it remained merely to insure that the minimal fatal vein dose should enter the circulation. This was accomplished as follows: A measured amount of the drug to be examined was placed in the stomach, rectum or subcutaneous tissues, according to which structure was to be studied, and after the desired interval of time enough of the drug was injected intravenously to cause death. The fatal dose by intravenous injection being known, it was only necessary to subtract that required under the above conditions from the ordinary fatal dose by the vein, the difference being equal to that absorbed.

The following will illustrate the point: One part of crystalline ouabain injected into the femoral vein of the cat is fatal to ten millions of times its weight of animal, or, 0.1 mg. of crystalline ouabain is fatal to one kilogram of cat in this way. A cat received by the stomach 0.3 mg. ouabain per kilo of weight and after four hours it required 0.076 mg. per kilo to cause death. The difference between 0.1 mg. and 0.076 mg. being 0.024 mg., or 24 per cent. of the fatal dose by vein, it follows that the cat had absorbed an amount equal to 24 per cent. of the fatal vein dose, but only 8 per cent. of that administered by the stomach.[3] The correctness of the method of estimating absorption is attested by the results obtained by the intravenous injections of variable proportions of the fatal dose of different digitalis bodies, death always resulting when the sum of the fractions administered equaled one hundred per cent. of the fatal dose. Fifty per cent. of the fatal dose of amorphous strophanthin by subcutaneous injection and fifty per cent. of the fatal dose of crystalline ouabain by the vein were also found to be fatal at once. We must conclude, therefore, that death follows the absorption of the fatal vein dose of one of the digitalis bodies into the general circulation, regardless of the method of administration.

This statement requires some modification. Since a barely fatal dose of crystalline ouabain might be absorbed slowly and a part excreted before the last had been absorbed without death occurring, it is more accurate to say that the presence in the general circulation of an amount equal to the fatal vein dose, is fatal to the animal.

1. Maurel's papers will be found in Compt. rend. Soc. de biol. during the past ten years.

2. Meltzer, S. J.: Jour. Exper. Med., 1901, v, 643.

3. The details of the method of injection are given in the Am. Jour. Pharm., 1910, lxxxi. The absorption of some of the digitalis bodies is estimated more conveniently, by substituting crystalline ouabain for the drug under examination for the intravenous injection, since we have found that these are capable of replacing each other in the proportion of their activity when injected by the vein.

In a series of experiments extending over several years we were able to get extraordinary uniform results with several of the digitalis bodies with intravenous injections into cats. Quite recently we have found a much larger number of cases in which the animal was more tolerant than just stated, but we have rarely seen animals succumb to smaller doses than that indicated except in the case of very fat animals. The results with strychnin are quite uniform when the duration of the injection is the same.

TABLE 1

ABSORPTION OF CRYSTALLINE OUABAIN FROM THE CAT'S ALIMENTARY CANAL

	Dose, Mgs. Per Kg.	Doses Daily.	Total Doses.	Per Cent. of Total Absorbed.	Per Cent. of Fatal Vein Dose Absorbed.
A.	0.1	4	5	10	42
B.	0.1	2	2	..	..
	0.05	4	14	7*	20
C.	0.1	2	2	..	..
	0.05	4	14	9*	55
D.	0.2	2	6	2.5	8
E.	0.2	2	2	..	..
	0.1	4	14	11*	69
F.	0.4	2	2	5	41
G.	0.4	..	1	..	..
	0.2	3	9	9*	69
H.	0.4	..	1	..	..
	0.2	3	6	8	52
I.	0.5	..	2	5	48
J.	0.6	..	1	..	..
	0.2	2	3	0	0
K.	0.6	..	1	..	..
	0.3	2	7	0*	0
L.	0.6	..	1	..	..
	0.3	2	7	1*	7

* The percentage of absorption is computed for the amount administered during the last 36 hours only.

The question which presents itself naturally is why do we not determine the rate of absorption from the alimentary canal by the simple process of administering enough of the poison by the mouth to cause death? There are several objections to this apparently simple method in many cases. It has been found[4] that the rate of absorption of strophanthin from the alimentary canal of the cat and dog depends on the amount administered, not only is a larger total amount of a very large dose absorbed than of a small dose, but a larger percentage of the larger dose is also absorbed. In fact, no absorption whatever appeared to follow moderately large doses in many cases, whereas death sometimes occurred promptly from large doses.

Another objection to the attempt to study the rate of absorption by the oral administration of the just fatal dose, depends on the fact that a very large number of experiments would be required to fix the just fatal dose by the mouth of such drugs as digitalis, and in fact it is often impossible because of the frequency with which emesis follows the absorption of less than the fatal dose.

Table 1 gives the absorption from the cat's alimentary canal where the administration extended over a number of days. The variability in the percentage of the fatal vein dose actually in the circulation, as shown in the last column, is of especial significance in view of the fact that strophanthus, (as well as crystalline ouabain) is used clinically in doses which would be immediately fatal if administered by the vein.

The death of cat "A" affords a striking example of the rapidity with which absorption may occur, just as "L" and "N" illustrate the opposite extreme. Fasting and alcohol certainly appear to favor absorption, and this is true perhaps of other mild irritants, though it did not follow the use of mustard, small doses of which were ineffective while larger doses caused emesis. It should be observed that the figures after the decimal points in the dose are multiples of the lethal vein dose; thus cat "A" had twice the lethal vein dose, while "M," "N" and "O" had eight times the lethal dose by vein.

The fall of blood pressure caused by large doses of hydrated chloral may have some influence on absorption, but this is variable and uncertain. The results with dogs are only approximately accurate, the dose by vein required to cause death being variable.

TABLE 2

ABSORPTION OF CRYSTALLINE OUABAIN FROM THE CAT'S ALIMENTARY CANAL (AFTER SINGLE DOSES)

	Dose Mgs. Per Kg.	Duration Hours.	Duration Minutes.	Per Cent. of Dose Absorbed.	Per Cent. of Fatal Vein Dose Absorbed.	
A.	0.2	2	35	..	100	.....
B.	0.3	18	..	0	0	.....
C.	0.3	1	40	0	0	With mustard; emesis in 15 minutes.
D.	0.3	3	40	5	15	With alcohol.
E.	0.3	4	10	8	24	After fasting 42 hours.
F.	0.3	6	10	0	0	With oil turpentine.
G.	0.3	5	50	3	10	With oil turpentine.
H.	0.3	19	10	6	18	After hydrated chloral.
I.	0.3	2	10	10	30	After hydrated chloral.
J.	0.5	6	30	0	0	.....
K.	0.5	18	55	3	15	After hydrated chloral.
L.	0.5	18	..	0	0	.....
M.	0.8	19	35	4	30	.....
N.	0.8	19	35	0	0	After hydrated chloral.
O.	0.8	5	..	5	40	After hydrated chloral.
			DOGS			
A.	0.3	6	30	0	0	.....
B.	0.3	..	40	..	100	After fasting 36 hours.
C.	0.5	3	0	12	50	.....
D.	0.6	6	40	2	10	.....

TABLE 3

ABSORPTION OF STRYCHNIN FROM THE CAT'S ALIMENTARY CANAL

	Dose Mgs. Per Kg.	Duration. Hrs.	Duration. Min.	Per Cent. of Dose Absorbed.	Per Cent. of Fatal Vein Dose Absorbed.	
A.	0.35	..	28	..	100	Stomach full of meat.
B.	0.5	1	20	40	100	After fasting.
C.	0.5	..	..	..	...	Death occurred 33 minutes after rectal dose.
	0.25*	..	33	30	70	.....
D.	0.5	1	51	4	10	.....
E.	0.5	3	7	0	0	.....
F.	0.5	..	54	14	33	.....
G.	0.3*	1	28	30	70	.....
H.	0.33†	..	..	..	...	Equal to 1½ times fatal vein dose.

* Rectum.
† Subcut; animal survived.

Table 3 shows the amount of strychnin in the circulation after the expiration of the time indicated, rather than the actual amount absorbed, since excretion takes place rapidly, soon after its absorption, though it is stated that some days elapse before excretion is complete. Our experiments seem to indicate that the strychnin

4. Hatcher, R. A.: Am. Jour. Physiol., 1909, xxiii, 393.

leaves the circulation very promptly, a part of it being fixed in the tissues probably, or it may be that some of the strychnin administered by the stomach escapes absorption into the circulation.

In the table, "E" is given as having absorbed no strychnin, since it required the full fatal dose by vein to cause death. But the animal had a typical convulsion before the beginning of the intravenous injection, hence we must infer that excretion was equal to the amount absorbed from the alimentary canal. It is of the utmost interest that "A" died after 0.35 mg. by the stomach while that organ was full of meat, whereas "H" survived almost exactly that dose administered subcutaneously. Absorption of strychnin from the rectum appears to be more rapid as a rule than from the stomach.

TABLE 4

ABSORPTION OF DIGITALIS FROM THE CAT'S ALIMENTARY CANAL

	Dose Mgs. Per Kg.	Duration Hours.	Duration Minutes.	Per Cent. Total Absorbed.	Per Cent. Fatal Vein Dose Absorbed.	
BY STOMACH						
A.	100	3	26	16	16	Infusion.
B.	100	3	2	7	7	Infusion.
C.	100	3	9	34	30	Tincture.
BY RECTUM						
D.	100	2	12	8	10	Tincture.
E.	100	4	37	2	2	Infusion.
F.	100	4	3	12	10	Infusion.

Table 4 shows the absorption of digitalis from the stomach and rectum. The limits of error are probably a little greater with digitalis than with crystalline ouabain. The fatal dose in the above table refers to the amount required by vein to kill at once, and is a little higher than the minimal lethal vein dose.

In this small series of experiments the absorption of digitalis from the rectum is decidedly less than from the stomach, but the number of experiments is entirely too limited to justify conclusions on this point. They certainly show the need of further studies in absorption of digitalis and these are now in progress in this laboratory. Different specimens of digitalis were used in the experiments tabulated, but in all cases the dose used was not far from the minimal lethal vein dose.

TABLE 5

ABSORPTION OF AMORPHOUS STROPHANTHIN FROM THE CAT'S ALIMENTARY CANAL

	Dose Mgs. Per Kg.	Duration Hours.	Duration Minutes.	Per Cent. Dose Absorbed.	Per Cent. Fatal Vein Dose Absorbed.
BY STOMACH					
A.	0.2	4	17	35	40
B.	0.2	4	55	12	15
C.	0.2	4	5	17	20
BY RECTUM					
D.	0.2	4	1	15	17
E.	0.2	3	10	20	23
F.	0.2	4	26	0	0

Table 5 shows that the absorption of amorphous strophanthin is very irregular, varying from none from the rectum of "F" to 40 per cent. of the fatal vein dose in the case of "A," but even this series does not show as great irregularities in the absorption as we have found in previous experiments. The dose of amorphous strophanthin used in these experiments is but little above the minimal lethal vein dose.

SUMMARY

The absorption of many of the digitalis bodies and of strychnin from the alimentary canal of the cat into the general circulation is very variable. But strychnin may be absorbed at times from the full stomach quite as rapidly as from the subcutaneous tissues.

Alcohol and perhaps other mild irritants favor the absorption of crystalline ouabain from the alimentary tract.

There is no general ratio of absorption of drugs from the stomach, rectum and subcutaneous tissues, and we are in urgent need of accurate observations of the rate of absorption of different drugs after various modes of administration.

There is a particularly urgent need for the investigation of the various digitalis bodies.

I am indebted to Dr. J. G. Brody for the care and patience with which he has carried out many of the experiments tabulated.

414 East Twenty-sixth Street.

STUDY OF SOME CASES OF ACUTE OTITIS MEDIA, SEEN IN CONSULTATION*

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If the better class of general practitioners in Baltimore is typical of their associates in other cities, it is evident that appreciation of early ear troubles is keener than it was a few years ago. Physicians are learning that the welfare of the ear or, possibly, the issue of life and death, depends on the diagnostic acumen of the man who first sees the case. The lesson which specialists have been trying for so long to impress on general practitioners is being taken home at last.

During the past few years consultations regarding a possible otitic origin of systemic conditions have greatly increased. These consultations have developed a number of facts which, I have thought, might furnish a basis for profitable discourse: hence the presentation of so trite a subject as acute otitis media.

I. PRIMARY OTITIC INFECTION

The general belief in regard to otitis media, taught in text-books and unquestionably largely correct, is that the ear becomes involved as a sequel to infection elsewhere. Among these infections is that great wastebasket, grip. After a few days of fever, malaise, with no definite symptoms of anything, the patient, if a little child, puts the hand to the ear, thus calling attention to it, and examination reveals otitis media. Again, there is complaint of pain, followed in a few hours by discharge: or otorrhea is the first observed ear symptom. Diagnosis of grip, with secondary otitis media, is satisfactory to the physician, and, maybe, to the aurist, too. It was to me until the care of some medical friends in diagnosis taught me otherwise.

To justify the diagnosis of primary otitic infection we would have to find: first, systemic evidence of infection; second, objective evidence of ear disease; third, absence of all local or general disturbances capable of producing ear complications; fourth, relief of constitutional symptoms and restoration to health by treatment confined to ear drainage. Pain is such an overshadowing symptom of otitis as to be practically the only one of which the physician takes cognizance. But pain in a child, too young to tell about it, is easily overlooked. Another still more significant thing is that pain is by

* Read before the American Otological Society, at its Forty-third Annual Meeting, Washington, D. C., May 3 and 4, 1910.

no means invariably present in otitis media. Hence, if primary otitic infection is a reality, if it is capable of producing systemic infection, it is our duty to urge on the internist the necessity of including the ear in a routine examination for the cause of such symptoms.

The manner in which the infection reaches the ear without manifesting its presence elsewhere is interesting, and, possibly, not difficult of explanation. It is well known that infectious organisms of various kinds, virulent and innocent, stay in the nose and nasopharynx for a long time, producing no results. They could easily reach the tympanum and manifest themselves there. Again, it is conceivable that they could come through the circulation. The important clinical feature, however, is that this otitic infection does not always show itself in the orthodox order of exciting cause, pain, and other subjective symptoms before the discharge makes diagnosis certain. Without them, nothing but routine examination of the ear by a physician who has qualified himself to make it, can demonstrate the cause of general illness. If he appreciates the meaning of injection of malleus-handle vessels, redness of Shrapnell's membrane, or even knows that the ear can be primarily infected, and calls in a consultant, the diagnosis is easy. In a number of cases with such symptoms and objective evidence of otitis media, I have found slight impairment of hearing, lateralization by Weber's test, and have seen recovery follow incision of the membrane. In one case last year, that of a boy of 10, without pain, temperature of 104 F., and slight redness and bulging of the superoposterior angle of the membrane, a single drop of streptococcus pus was evacuated, followed after a day by discharge. Symptoms were dispelled by the incision.

II. DELAYED APPEARANCE OF OTITIS

Akin to primary otitic infection are the delayed ear complications of various diseases. I allude to otitis media, sequel of infectious diseases, but removed from the causative disease long enough to throw doubt on causative relation. Either there is latent tympanic infection after the acute disease, or a new ear infection. For instance, a child has measles and passes through the attack without ear symptoms. Two or three weeks later, without other symptoms, and when recovery is seemingly complete, otitis media develops. Such cases, I believe, are not particularly uncommon, after measles and grip. In a few which I have seen there was the typical order of pain, fever and otorrhea, unless the case was seen before perforation. In others, sudden return of fever was the only symptom, and otitis was found because the physician looked for it or had it looked for.

Latent infection of the middle ear shows itself, too, in another way: apparent recovery of acute otitis media, with later mastoid symptoms. I brought this subject before the Section on Laryngology and Otology of the American Medical Association, in 1901, and have seen several cases since. One will suffice. A man of 48, after exposure in riding on the front seat of an electric car, developed pain in the right ear, with temperature of 102. He was seen by his physician, who found nothing but fever and ear pain. The drumhead presented all the indications for incision, but operation was refused. Two days later the physician reported that otorrhea had appeared, with relief of pain and fall of temperature. Soon I learned that hearing for the watch was normal and the patient entirely recovered. He went along with his business for seven weeks, when he was seized, while at his office, with severe earache. Mastoid symptoms developed rapidly, and on operation after twenty-four hours the antrum and cells were found necrotic and full of pus. The easiest explanation seems to be that infection went to the mastoid at the first illness: but why it was so long in causing symptoms, or why the patient was apparently well for seven weeks, with disease progressing in the mastoid, is not so easy to explain.

Such cases have one important bearing on every-day otology. I believe that we all see cases of deafness following infectious diseases, without history or gross evidence of inflammatory otitis. There is nothing in the patient's condition to account for it. Fork tests show that it is due to middle ear disease. Inference seems justifiable that the acute disease left otitic infection not sufficiently virulent to cause immediate symptoms, but capable of doing one of two things: slowly breaking down tissue through spread of infection, or keeping up a constant hyperemia, leading to exudate, and so bringing about sclerotic changes in the tympanum. Among the facts we should try to impress on general practitioners are the following: that these latent ear infections are frequent; that their ultimate results are uncertain; that the tympanum is in the natural path of danger, just as the lungs are; and that the patient should not be dismissed as well until adequate ear-examinations have been made. In a few cases brought me by physicians after measles, scarlet fever, grip and the like, I have found interference with Eustachian function, and definite fork evidence of middle-ear deafness. Men should know from us that this is the time to save hearing.

III. PROLONGED REMITTING FEVER: DIAGNOSIS

A feature which often puzzles not only the physician but his consultant, is the meaning of prolonged fever in a seemingly light case of otitis media. During or after an infectious disease, otitis media develops. Maybe the membrane is incised; again it is allowed to ulcerate. The patient recovers from the original trouble, and to all appearances, from the ear complication. Pain disappears, the discharge lessens or ceases, hearing improves. Yet fever continues. If it is due to the ear it is our duty to get complete drainage: if not, the physician wants to know. It is a question of diagnosis which may, on the one hand, involve mastoid operation, not for mastoiditis but for tympanic drainage, and at the same time we must be careful not to operate on a patient for ear sepsis when he has something else.

Brief notes of three cases are appended.

CASE 1.—A man of 35 developed acute otitis media after rhinitis. Pus was found after membrane incision. Two days later, mastoid tenderness developed. Temperature for the first week is given in Figure 1. On the fourth day the patient was sent to the hospital, as mastoid operation was thought probable. Local symptoms were less pronounced the day after, and almost disappeared in another twenty-four hours. For the next three days the patient had a steady fever, without remissions. His physician, Dr. Charles W. Mitchell, was unable to determine its cause, if the ear and mastoid were excluded. Three factors in the case led me to exclude them: (1) steady improvement in local symptoms, and their total disappearance after a week; (2) character of the fever line; and (3) a leucocytosis of 4,000. Typhoid fever was thought of; but it was the sixteenth day before rose spots were found, and positive Widal was obtained only toward the close of the fourth week.

CASE 2.—This shows how easily a specialist can overlook a concurrent lesion. A healthy, athletic man of 29, without previous illness, was attacked early Saturday morning with a chill and right earache. He fought it out alone all day, but on Sunday called in an aurist, who found a temperature of 104 F., with objective evidence of acute suppurative otitis media. For

reasons I did not discover, he postponed incision until Monday afternoon when it was done at a hospital under chloroform. To Wednesday night temperature ranged about 102 without remission. Further operative procedures were then considered; but a consultation was asked by the family. I saw the case Thursday afternoon. That morning, six days after the initial chill, temperature had dropped to 97.5. I found the ear dry, and no evidence of mastoiditis. The outcome of the case was that the man was allowed to continue an uninterrupted recovery from an unrecognized, limited, right pneumonia.

CASE 3.—Temperature chart of a third case (Fig. 2) is given by way of comparison. The patient was a girl, aged 12, who developed left acute otitis media after apparent recovery from uncomplicated measles. She had been kept in the house and for the most part in bed for the eight days before ear trouble was found. Her physician, Dr. Mitchell, found it in routine examination for relapse of fever. She had nothing directing special attention to the ear. When called in, I found definite left suppurative otitis, without perforation, while the drumhead of the right was congested. Leucocytosis was 16,000. After left myringotomy, which I did at once, temperature fell from 104 to 101.6, and stayed there two days. Then the right drumhead was incised, though there was no pain. For the next five days there was remitting fever. On the fifth the left mastoid was tender to pressure, but no pain otherwise. I asked Dr. Harry Friedenwald to see the case with me, and we decided that symptoms were not sufficiently urgent for mastoidectomy,

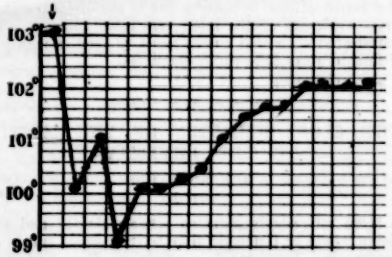

Fig. 1.—Temperature in otitis media with typhoid fever (Case 1) in first week. Arrow point indicates incision of drumhead.

and that the left drumhead, the one first incised, which had healed, should be incised a second time. After this, mastoid tenderness disappeared, and recovery, though slow, was uninterrupted.

The case illustrates (1) the delay which may ensue after disappearance of the causative disease before ear complications develop; (2) what I believe to be the characteristic of otitic temperature—in all essentials, that of a mild sepsis; and (3) the value of leucocyte count. When able, I have this count made in acute otitis media, and it rarely is below 15,000. Considerable observation of cases like these has led me to think that in the temperature line and leucocyte count we have pretty reliable guides regarding an otitic cause of systemic disturbances as distinguished from essential fevers. There is always the possibility of another lesion with the ear trouble.

There is another side to this matter. Sometimes we are compelled to do a mastoidectomy for drainage, though there are no symptoms of mastoiditis. Even when the process is painful on pressure, tympanic drainage is often enough. In deciding if mastoid drainage is needed I believe that the amount of the otorrhea is an important guide. There is nothing new about this, yet it is a guide often neglected. It is unnecessary to relate cases in which, without definite mastoid symptoms, operation has been done because of persistent fever, of septic type, and profuse purulency. Chills, sweating, extreme variations in temperature (105 and upward, to subnormal), profound exhaustion—the things which lead us to uncover the sinus—are absent. The cases drag themselves along for weeks, with about such a temperature line as given in Case 3, without pain, and copious with purulent discharge. When they come to operation, extensive disease is found in the mastoid walls. A question I should like to hear discussed is: What is the line of demarcation between the safety of tympanic, and necessity for mastoid, drainage? Is there anything, outside of time and profuse discharge to guide us?

Fig. 2.—Temperature in double acute otitis media (Case 3), eight days after measles. First arrow point indicates incision of left membrane; second arrow point, incision of right membrane; third arrow point, second incision of left membrane.

IV. CONVULSIONS

I want, finally, to call attention to three cases of acute otitis media, which were new observations to me.

CASE 4.—The first case is that of an infant, 5 months old, whom I saw in consultation with Dr. Thomas R. Brown. At the age of 3 months the baby had measles, which left in its wake enlarged cervical glands. The week before I saw her, she had a transient, general vesicular eruption which Dr. Brown diagnosed as chicken-pox. Three days after the disappearance of the eruption, there was a convulsion, followed by stupor, lasting an hour or so. Rectal temperature was 103. Dr Brown found a leucocytosis of 18,000 at his first visit. While he was in the house the child had a convulsion, with dilated

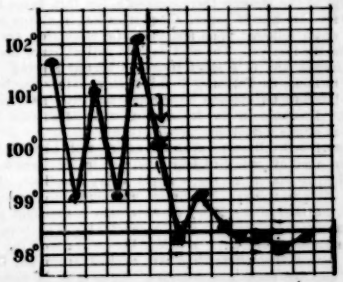

Fig. 3.—Temperature in otitis media, with referred pain (Case 6). Arrow point indicates myringotomy for scalp pain.

pupils, rigidity and unconsciousness. Dr. Brown examined the ear, and found, as he thought, redness and bulging of the supero-posterior angle of the membrane. I was called in at night. Temperature then was barely 100; the child was free from pain, took its bottle eagerly, and did not look sick. The right drumhead presented evidences of otitis media: but there was no bulging, and in view of the generally improved condition, I decided to do nothing till the next morning. At 8:45 a. m. I received a telephone message that the child was worse, had had two convulsions, and rectal temperature was 103. As soon as possible Dr. Brown and I reached the country home

of the patient's parents. The drumhead was now bulging in the supero-posterior angle, and leucocyte count was 24,000. Without anesthetic I incised the drumhead, continuing the incision into the canal wall. A very little pus was evacuated, and recovery was uneventful. At no time was there evidence of pain.

While this is my one observation of ear convulsions, I have known, as have all of us, of babies dying of supposed meningitis, with otorrhea toward the close. I can count a half dozen such cases in the families of friends, and learned of in conversation with physicians. The intimate connection between the tympanic and cranial cavities in infancy, through the squamo-petrosal suture, is probably sufficient explanation. The interesting fact, however, is that physicians are appreciating such possibilities.

V. REFERRED PAIN

The other two cases I have classified as "referred pain."

CASE 5.—The patient was a nurse, aged 24, at the Union Protestant Infirmary, who came to me on January 25 last for diagnosis. Two nights before I saw her she was awakened by severe pain along the anterior border of the sternocleidomastoid muscle, at least two inches below the tip. The slightest pressure here over an area of an inch in circumference was painful. Temperature was normal and no hearing defect could be found. The drumhead presented a normal appearance. Leucocyte count was 8,000. The patient was put to bed and given first salicylate of sodium, and later acetylsalicylic acid (aspirin), with little effect. Morphin was needed to secure relief from the strictly localized pain. The only pain in the ear proper was produced by brushing the posterior wall of the canal with a cotton pencil or touching it with a probe. Hearing for the watch gradually diminished, and in four days was only on contact. A loud whisper could then be heard at two or three feet, and fork test, Weber's, was lateralized to the bad ear. I could find nothing by inspection, save, possibly, increased blanching of the drumhead. Temperature during these five days did not go above 99.5. On January 31, on account of the falling off in hearing, I determined to incise the drumhead, which was done under nitrous oxid. The membrane cut like stiff parchment. Through the lips of the incision there escaped a few thin flakes looking like very thin bits of paper. They were lost in a drop of clear fluid which followed them and the little blood from the upper edge of the incision. The next day the patient heard the watch at 6 inches, and in a short time had normal hearing. Twice after incision, on February 1 and 2, temperature reached 101. This followed an attempt to syringe the little clot from the canal. The pain in the muscle was relieved at once by the incision of the membrane.

CASE 6.—Dr. Brown asked me to see with him Mr. W., a lawyer, aged 49, who had been first seen by Dr. Brown on the morning of March 21 for a slight right tonsillitis. It subsided after two days. Dr. Brown was summoned again early in the morning of the 24th for severe pain in the right parieto-occipital region. As seen by the chart (Fig. 3), there was a temperature of 101.6. I saw Mr. W. on the morning of the 25th. A mustard plaster had been applied, before Dr. Brown's visit, and the scalp was reddened. Pain came in paroxysms, the slightest movement producing it. It was confined to a limited area, at least 2 inches behind the meatus, the intervening space over the mastoid being free from tenderness or congestion. The drumhead presented the appearance of a mild catarrhal otitis. Hearing was normal for watch and speech. Because of the remoteness of pain from the ear, and normal hearing, I hesitated to connect the ear with the occipital pain. The patient was given an atropin and cocain solution to use during the day, but reported in the evening that he had had no relief. His temperature was 102, while the drumhead presented the same appearance as in the morning. Weber's fork test was lateralized on the affected side. In spite of morphin the patient had a wretched night, every movement of the head causing paroxysmal pains limited to this one spot in the scalp. I saw him again at 8 a. m. on the 26th. He was prostrated by two sleepless nights, and accepted what I told him was a purely experimental incision of the reddened supero-posterior angle of the drumhead. His hearing was absolutely unaffected save for Weber's lateralization. Fair anesthesia was obtained by an alcoholic and oily solution of cocain (20 per cent.). Relief from pain was almost magical. As in the case of the nurse, the drumhead cut "stiff." There was some little hemorrhage, but no pus, so far as we could see. Recovery was prompt without impairment of hearing.

I presume that these referred pains were due to an unusual connection between the tympanic nerve and other branches of the glossopharyngeal through the petrosal ganglion.

I have thought these observations in acute otitis media of sufficient interest to put on record. Behind them, however, is the fact that but for the thoroughness of diagnosis on part of the internist, the cause of the fever, convulsions, pain would not have been determined. Improved attitude toward ear troubles on part of our medical associates has brought about a definite change in our practices; at least, in mine. In private work chronic suppurative otitis media, of which years ago I saw so much, is rare. Even acute otitis media, allowed to go on to ulceration of the membrane is not very frequent. But constitutional symptoms due to ear disease, without gross evidences of the latter, are more common. The moral of it all is that aurists must be good enough physicians to make differential diagnoses.

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THE CLOSE RELATION OF THE DENTIST TO THE PHYSICIAN *

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More intimate cooperation between dentist and physician would be beneficial alike to the patient and to the profession. Dentistry is a specialty of medicine; the stomatologist, with a broad knowledge of general medicine and a particular training in his own field, is exactly on a par with the oculist, the laryngologist or the obstetrician. Thorough knowledge of the principles of medicine must underlie all successful treatment of disease, and the patient must be regarded as an individual, not a collection of separate organs, each to be treated alone. Since one region of the body cannot be isolated from the entire organism or separated in its development, nutrition, function or diseases, neither can its treatment be a separate matter. The person attempting to treat one part of the system must understand the whole, at least broadly, in order to apply general pathology and therapeutics to his particular part. With this intelligent survey of the whole field, the dentist can be a most efficient factor in the prevention of disease and in its successful treatment. A fuller appreciation of their mutual interests would bring the family physician and dentist more often together in their work.

Many cases of general asthenia, malnutrition and anemia under medical treatment are primarily due to oral causes; and not all the tonics in the Pharmacopeia will suffice to cure the patient who cannot chew his food, or who is constantly swallowing bacteria and their products from conditions of oral sepsis, such as dental caries and pyorrhea. In daily practice these unfortunate patients are a trial to their physician, who seldom

* Read in the Section on Stomatology of the American Medical Association, at the Sixty-first Annual Session, at St. Louis, June, 1910.

accomplishes much toward permanently relieving their state of health until he examines the source and not the sequel of the symptoms, and insists on proper treatment of the mouth and teeth. The careless doctor, who hastily writes a prescription for pepsin for the dyspepsia, cascara for the constipation, or iron for the evident anemia in such a case, will be disappointed in the results of his treatment unless he goes much farther and seeks and removes the cause of the trouble. Consultation with an able dentist will often save the patient great expense and much depreciation in health, and prove the real way to recovery; whereas months of desultory medical treatment alone would bring only trifling and temporary improvement of symptoms—to the disgust alike of the patient and physician, who often part company at this stage with a feeling of mutual relief. The busy physician dismisses the matter from his mind with the thought that "there's no satisfaction in treating these chronic cases that are all run down," while the patient either plods along on a lower level of efficiency than he should be occupying, or suffers still further from the natural development of his morbid state. After a time secondary conditions arise. Chronic nervous and mental disturbances may appear, neuralgia, insomnia and the various fatigue neuroses, leading, in neglected cases, even to a complete physical and mental breakdown.

A fair review of these cases shows that the terminal symptom-complex was rendered possible by the low vitality of the patients, that is, by anemia and malnutrition, due to a chronic indigestion caused by imperfect mastication due to faulty teeth. Therefore, the logical early treatment was dental rather than medical; and the family physician should have pointed this out. Among his many mistakes, the sins of omission are not the least important.

Still more is this true in the case of children, in whom neglect of proper dental treatment leads often to defects of growth that become irremediable. Living proofs of this are to be seen on every hand, but even yet are not receiving the attention they merit. Take for example, the numerous cases of nasal obstruction, with adenoids, enlarged tonsils, and often recurring catarrhal inflammation with or without extension to the frontal and maxillary sinuses, or the Eustachian canal and middle ear or mastoid cells. How many physicians or general surgeons realize the advantage of cooperation with the dental surgeon in the treatment of these children? It is not enough to tell the parent to have the child's teeth attended to and his tonsils and adenoids removed. In too many instances this does not end the trouble. The narrow arch and nostrils and high palatal vault with deflected septum will maintain the habit of mouth-breathing; the pharynx and mouth will be dry and irritated; the larynx, trachea and bronchial tubes will be injured by the rapid inhalation of unwarmed, unfiltered air, and danger to the lungs may ensue. As the child attempts to overcome his mouth-breathing habit, he is obliged to breath more slowly and less deeply than normally through his nose, and suffers from the diminished supply of oxygen. His impeded respiration requires an increased action of the voluntary respiratory muscles and leads to faulty growth of the chest wall resulting in protuding sternum and scapulæ, high shoulders and spinal distortion, while his whole respiratory condition impairs his vitality and favors the onset of disease, colds, catarrhs, deafness, mastoid disease, quinsy, tonsillitis, rheumatism, diphtheria, scarlet fever and tuberculosis. And this is not all. The child of this type has a narrow arch, too small to accommodate his permanent teeth. As these are erupted, the crowded teeth may give rise to much prolonged pain and nervous disturbance which the undervitalized child is ill able to bear. With his irregular teeth he cannot masticate his food properly, and again his nutrition suffers. Deprived of abundant oxygen and digestible food-supply, he becomes the easy prey of the diseases of adolescence. The remedy is plain, namely, proper combined dental, surgical and medical treatment early in the case, and continued long enough to correct the deformity.

The surgeon and the dentist may well work together in the treatment of fractures of the jaws, in which the dentist can make a splint for retaining the fragments in position until bony union occurs, much more satisfactory than the one the surgeon is likely to buy or devise for himself. Even in the surgery of the cranial vault, a closer association of surgeon and dentist would benefit the patient, the dentist's familiarity with the dental engine enabling him to cut with delicacy and precision in places where the ordinary trephine or chisel would be most unsatisfactory and hazardous. So also with the drilling of holes for nailing or wiring bony fragments in fractures of the long bones, the drill operated by the dental engine being far superior to any hand drill or to the hammer and nail which too often splinter the bone. In some orthopedic work, the dentist, with his greater knowledge of mechanics and skill in the use of metals, could often help much in the adjustment of splints and appliances.

In various suppurations about the head and neck, the surgeon is often at a disadvantage without consultation with his dental confrère. Antral disease of nasal or dental origin, parotid or submaxillary abscesses, swollen or suppurating cervical lymph glands, periostitis or necrosis of the maxillæ may be due, more or less directly, to faulty dental conditions—a fact which the surgeon is apt to overlook, but which is readily apparent to the dentist. The more obscure cases of neuralgia (so-called) will sometimes require the united efforts of dentist and physician to illuminate their etiology and direct their successful treatment.

Another line in which the physician and the dentist may help each other is the giving of anesthetics. Few general surgeons are fully acquainted with the many advantages of nitrous oxid and not only omit to use it when operating themselves, but advise patients not to take it, even for dental operations. Such advice must result from a meager knowledge of its effects, and cannot be other than detrimental to the patient's interests in many operations in which anesthesia is required for but a short time. For prolonged operative work the combined use of nitrous oxid and oxygen gives a satisfactory anesthesia in most patients, especially in those with chronic bronchitis, valvular heart disease or some other contra-indications for either chloroform or ether. The ease and rapidity with which the patient is put to sleep, the safety with which that sleep may be prolonged by giving oxygen with the nitrous oxid and the quick awakening to consciousness, usually without nausea, render this method of anesthesia an ideal one for many dental and surgical operations, although there are certain drawbacks to its use. It is more expensive than chloroform or ether, less readily obtained away from large cities, less easily kept on hand for emergencies and less easily carried and handled, outside of the office or hospital. On account of his better training and wider experience with this anesthetic, the dentist may properly be called on to administer it for surgical oper-

ations, just as the physician is asked to give ether or chloroform for dental operations. In any operation requiring a general anesthetic, neither surgeon nor dentist should be willing to operate without the assistance of a competent anesthetizer who can take full responsibility for the patient's condition.

In conclusion, the interests of the patient would be furthered by consultation between the physician and the dentist, not only in occasional operations and in special cases of injury and deformity, but in many conditions of acute and chronic disease. An intelligent acquaintance with each other's work and a friendly understanding of mutual respect between the members of the profession is greatly to be desired.

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ABSTRACT OF DISCUSSION

DR. LEE WALLACE DEAN, Iowa City, Iowa: No physician should ever remove in a child nasal or postnasal obstructions without sending that child to the dentist; if he does so he does an injury to his patient. The teeth I know but little about, but I do know that they may look all right to the physician when they may be too close, or there may be other conditions which will cause that child trouble in years to come. I do know that practically every child that has adenoids or postnasal obstruction removed has some irregularity or disturbance of the teeth. In my clinic I find there are few cases of postnasal obstruction in which there is not some disturbance that the students can detect. Every one of these children coming into my hands is sent to the dentist. I regret to say that the great majority of them do not get to the dentist; I have done my duty. No rhinologist is ever justified in removing turbinate tissue from a nose to secure breathing-space, so long as there is a chance for that breathing-space to be secured by the dentist.

It seems to me that the dentist should refer cases to the rhinologist. All patients with irregularities of the teeth should be examined for nasal and postnasal obstruction. Many cases of caries of the teeth might be influenced by mouth-breathing at night, and the dentist might be wise if he would send these patients to the rhinologist to see if there was a condition that might result in mouth-breathing at night.

THE SYMPTOMATOLOGY AND DIAGNOSIS OF MENINGITIS OF OTITIC ORIGIN*

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This subject has been so thoroughly discussed during the past few years that it would seem presumptuous for me to attempt to add any new facts. I can only hope, therefore, to present the matter in the manner in which it has been brought to my attention from the observation of a rather large number of cases.

We may classify meningitis of otitic origin as (1) circumscribed meningitis or epidural abscess, (2) serous meningitis, and, (3) purulent meningitis.

Of the symptomatology of circumscribed meningitis, very little need be said. In most cases, the diagnosis of this condition is made on the operating table. A circumscribed pachymeningitis is an effort on the part of nature to prevent general infection of the subdural lymph sac; in other words, to prevent a diffuse, purulent meningitis. The only symptoms which these patients present are localized headache in the region of the purulent collection, and a slight elevation of temperature. These symptoms, occurring in the course of an acute otitis media, whether or not they be complicated by evidences of mastoid involvement, are sufficient to warrant the surgeon in suspecting incipient meningeal involvement. In quite a large proportion of my own cases, I have been able, from these symptoms alone, to make a diagnosis of a localized pachymeningitis. As before stated, however, a localized collection of pus, lying between the dura and the bone, is frequently found at the time of operation on the mastoid, without any suspicion of its existence, on the part of the surgeon prior to the time of operation. While these cases are frequently not considered under the head of "otitic meningitis," on account of the extremely indefinite symptoms which are presented, it seems to me that they deserve more than passing attention. Given a case of acute inflammation of the middle ear or of a chronic inflammation of the middle ear, with an acute exacerbation, in which the patient complains of localized headache, rather than of severe pain in the ear or pain in the mastoid, and localized tenderness either in the post-mastoid region or just above the zygoma, we are, I believe, warranted in suspecting that the inflammatory process has extended beyond the limits of the mastoid, and that it has already involved either the cerebellar fossa or the middle cranial fossa.

Aside from these symptoms of moderate temperature elevation and localized headache, together with local tenderness, I know of no means of making a diagnosis of this condition. But, given these symptoms, I believe that it is always wise for the operator in exploring the mastoid, to consider seriously the exposure of the dura in the middle cranial or cerebellar fossæ, as a final step of the operation.

THE SEROUS AND PURULENT FORMS

The second and third division of the subject are of much greater interest—that is, cases of serous meningitis or diffuse purulent meningitis, following inflammations of the middle ear. Whether the inflammation of the cerebral membranes is serous or purulent depends very largely on the virulence of the infecting organism. It is probable that a serous meningitis is invariably present in the early stages of a purulent meningitis. If the resistance of the patient is sufficient to combat successfully the constitutional infection, the subdural effusion remains serous. If, on the other hand, the infection is severe, the subdural space is invaded by the microorganism and a purulent meningitis is the result.

We know from post-mortem examinations that the most frequent avenue for the transmission of infectious material from the middle ear to the meninges is through the labyrinth, either directly through the internal auditory meatus, or through the aqueductus vestibuli or aqueductus cochleæ.

Lermoyez,[1] in his admirable article, says that in 65 per cent. of all cases of otitic meningitis, the invasion takes place through the internal ear. In the remaining cases, the infection of the cerebral membranes takes place by continuity of structure, either in the middle cranial fossa, or in the cerebellar fossa, either directly or through the lateral sinus.

DIAGNOSIS

In cases of suspected meningitis of otitic origin, therefore, an early investigation should always be made for evidences of labyrinthine involvement. The patient should

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. Tr. Eighth Internat. Otol. Cong., Budapest, p. 4.

be carefully examined for any disturbance of equilibrium, such as a staggering gait when walking with the eyes closed. This examination can be made only in the very early stages of the disease. The eyes should also be examined for nystagmus. In the early stages of a labyrinthine involvement, this nystagmus may occur either toward the affected side or toward the healthy side. As the labyrinthine lesion progresses, however, the nystagmus toward the affected side disappears and the nystagmus toward the healthy side becomes marked, this symptom being an evidence that the affected labyrinth is paralyzed. An investigation of the labyrinth should, when possible, be made, both by the turning test and by the caloric test, in order to determine the exact condition of the labyrinth, and to discover the true significance of the nystagmus. It should also be remembered, in cases of meningitis involving the vestibular nerve, that a nystagmus toward the sound side, indicating a paralysis of the affected labyrinth, may later disappear and a nystagmus toward the affected side make its appearance. This is positive evidence of a retrolabyrinthine lesion—that is, of a lesion either in the cerebellar substance or in the meninges in the immediate vicinity of the vestibular nerve.

In cases of otitic meningitis, in adults, an examination of the hearing is of considerable importance. It is hardly possible to have the vestibule involved, to any extent, without having considerable involvement of the cochlea. For this reason, the appearance of sudden and profound deafness in a case of middle-ear suppuration, particularly if associated with vestibular symptoms—should always lead the surgeon to suspect a beginning meningitis.

Involvement of the cochlea ordinarily manifests itself: first, by profound deafness, second, by loss of bone conduction, and third, in the failure of perception of the high notes of the musical scale. As invasion of the cochlea in these cases ordinarily occurs directly from the middle ear, it is easily understood why this perception of the highest tones of the musical scale should be lost, since that portion of the cochlea nearest the tympanum is concerned in the perception of these high notes.

Many authors speak of the occurrence of facial paralysis as a symptom of considerable importance, and one which should lead the observer to fear a beginning meningitis. While at first this seems plausible, it has not been borne out in my clinical experience. For instance, I have seen a large number of cases of facial paralysis occurring in the course of middle-ear suppuration, in which the patient never exhibited the slightest evidence of meningitis. Many of these cases have been followed for a long period of time, so that, had any meningeal symptoms developed, they would certainly have been recognized. Naturally, I am here referring to the cases of facial paralysis occurring in the course of the suppuration, and not to those dependent on traumatism at the time of operation.

It is probable that a serous meningitis is almost never fatal. In my experience, I can remember but one case in which, though the cerebrospinal fluid remained sterile, a fatal outcome followed. It is likely that in the first stage of every meningeal inflammation, we have a serous effusion in the subdural space, and, in some cases, into the lateral ventricles as well. If these spaces become invaded by the specific microorganisms, then a purulent meningitis follows. If, however, such infection does not take place, the serous effusion is gradually absorbed and recovery occurs.

Certain surgical and therapeutic measures are unquestionably of value in this serous stage, and these will receive proper attention at the hands of my distinguished colleague, Dr. Mygind, who is to speak on the treatment of otitic meningitis. As the symptoms of the serous form of meningitis pass, with almost imperceptible gradations, into those of the purulent form, I shall not attempt to make any distinction in the symptomatology.

COURSE

The course which a purulent meningitis may run, may be divided into two types:

1. The rapid or fulminating type.
2. The slow or progressive type.

In the fulminating type of meningitis we have very few symptoms. The disease runs its course with great rapidity, and may cause death within a few hours.

CASE.—In a case observed some time ago, the patient, a child of about 4 years, had suffered from a double acute otitis media for about ten days before I saw it. At the time the patient was first seen, both ears were discharging slightly, a myringotomy having been previously performed on both sides. Both drum membranes were at once freely incised, this procedure being followed by a fall in temperature and a more profuse discharge. The patient up to this time had exhibited no cerebral symptoms, although there had been an elevation of temperature from 102 to 104. Three days after I first saw the patient the temperature suddenly rose to 105.5, and both mastoids were opened. A considerable amount of softened bone was found on each side. Owing to the sudden, abrupt rise in temperature, both lateral sinuses were exposed, as it was thought possible that there might be a thrombosis of the lateral sinuses. Both sinuses were found normal, and, consequently, were not opened. The child rallied immediately after the operation, but twelve hours later the temperature began to rise slowly, the pulse became poor and rapid, the child gradually sank into unconsciousness, and died in about thirty-six hours after the operation. The infection, in this case, was a pneumococcus, and, although no autopsy was permitted, the diagnosis of a pneumococcus meningitis was made.

I have seen cases of this kind occasionally, and they certainly present a distinct type of the disease.

SYMPTOMS AND DIAGNOSIS OF PROGRESSIVE MENINGITIS

When we come to the consideration of the slow or progressive type of meningitis, we have certain symptoms which aid us in our diagnosis. In adults, in the severe cases, headache is a prominent symptom. This is usually severe in character, and is general rather than localized. Vomiting also occurs in a large proportion of cases, and this vomiting is ordinarily preceded by constipation. The temperature is a valuable indication. In the severe cases the temperature is ordinarily considerably elevated, rising quickly to 104 or 105, and seldom dropping more than a degree or a degree and a half below this level. In the milder cases of meningitis—that is, probably, during the serous stage of the inflammation—the temperature may not be so much elevated. I have seen a number of cases in infants run their entire course and terminate fatally without the rectal temperature rising above 103 until just before death. It has been my experience that the cases in adults run a very much higher temperature than do the cases in infants, this being exactly the reverse of what would be expected. It has also been my experience that vomiting is a rather more common symptom in adults than in infants.

NEUROMUSCULAR SYMPTOMS

Localized neuromuscular symptoms may appear early in the course of the disease, and this applies both to the serous and purulent varieties. These neuromuscular

symptoms affect usually the ocular muscles. In the early stage of the disease, we ordinarily have a contraction of the pupil on the affected side, and not infrequently have a paralysis of the sixth nerve on the corresponding side, leading to an internal strabismus. As the disease progresses, the contraction of the pupil disappears, and, owing to a partial paralysis of the third nerve the pupil becomes gradually dilated. While the paralysis of the sixth nerve is ordinarily confined to the side of the affected ear, I have seen an abducens paralysis of the opposite side. This, of course, is easily explained from the fact that the apices of the petrous pyramids lie in close proximity, and a meningeal inflammation may easily extend across the median line, and involve the abducens of the opposite side, although the abducens of the affected side may escape.

Stiffness of the neck is one of the earliest neuromuscular symptoms met. This ordinarily occurs both in children and in adults, in the very early stages of the disease. In infants, I look on rigidity of the neck as one of the earliest symptoms of a meningitis, especially if this sign is associated with an elevation of temperature.

REFLEXES

The patellar reflexes are usually increased, the exaggeration being more marked usually on the affected side, in the early stages. The Kernig sign is usually present, and in a number of cases I have been able to elicit the Babinski sign early in the course of the disease.

MENTAL CONDITION

In adults, the mental condition of the patient is of considerable significance. In the early stages, there is frequently a mild delirium, this condition passing into coma as the disease advances. In children, instead of delirium, we may have general convulsions, although, in my experience the occurrence of convulsive seizures is rather rare in an otitic meningitis.

THE BLOOD

The examination of the blood is sometimes of value. In cases in which a differential blood-count has been made, I have usually found a high leucocytosis, and a decided increase in the polymorphonuclear percentage. In most of the cases the polymorphonuclear proportion has been between 85 per cent. and 90 per cent. Whenever, as the result of therapeutic or operative measures, a temporary improvement has taken place, this has always been followed by a fall in the polymorphonuclear percentage. It seems, therefore, that the differential blood-count, in these cases, is a valuable aid in diagnosis.

THE CEREBROSPINAL FLUID

The most certain and convincing evidence which we have of the presence of a meningeal inflammation is the information derived from a lumbar puncture. This puncture should always be made early in doubtful cases, and may be repeated as frequently as is necessary. In most instances, the cerebrospinal fluid will be found to be under considerable tension. In cases in which there is a great increase in the amount of the cerebrospinal fluid, on lumbar puncture it will be forcibly expelled from the exploring needle. I have seen the jet rise several inches above the opening in the needle, with the patient in the prone position. The physical character of the cerebrospinal fluid is naturally an aid to diagnosis. If there is a clear fluid which, on microscopic examination shows no micro-organisms and few or no leucocytes, we have to deal with a serous meningitis. If, however, the fluid is cloudy or turbid, and contains a large number of broken-down leucocytes, particularly of the polymorphonuclear variety, and also contains micro-organisms, we have to deal with a purulent meningitis. It should be remembered that an increased amount of serous fluid in the spinal canal may not, of necessity, mean an inflammation of the cerebral membranes. Such an increase in the cerebrospinal fluid is found in cases of neoplasm within the cranial cavity, and in cases in which the cerebrospinal fluid is germ-free, and contains no pus-cells, the possibility of an intracranial neoplasm should always be borne in mind.

The character, then of the cerebrospinal fluid is, perhaps, the most important element in diagnosis. If we have to deal with a fluid free from germs and containing no pus, we know that we are dealing with a meningitis in its early stages. It is probable that in cases of this character simple relief of pressure and a thorough eradication of the focus of infection will be sufficient to effect a cure. In cases in which the cerebrospinal fluid contains one of the various micro-organisms so frequently found, such as a pneumococcus, streptococcus or meningococcus (*diplococcus intracellularis*), very radical surgical measures must be taken in order to give any hope of relief.

OCULAR SYMPTOMS

An examination of the fundus oculi will, in many cases, show the presence either of beginning or of well-marked choked disc. These changes in the optic nerve are common to all cerebral lesions, accompanied by an increased intracranial pressure. While, therefore, the swelling of the optic papilla with dilatation and tortuosity of the veins cannot be regarded as in evidence of meningitis, but simply as a sign of some intracranial complication, the occurrence of this symptom, in connection with the other symptoms already mentioned, will, of course, be a valuable aid in confirming the diagnosis. The ocular changes may occur on either side, but are most commonly found on the side corresponding to the ear involved.

CONCLUSION

I regret that I have been able to add so little to the knowledge of the subject at hand. I have simply stated the results of clinical experience. It has appeared to me in the course of my observation of cases of meningitis, that the earlier we can make the diagnosis, the better will be the prognosis. In other words, if the symptoms of meningitis are recognized early, the surgeon by prompt interference may be able to prevent the disease from passing beyond the serous stage, and, in some cases, in which an actual infection of the subdural space has occurred, may be able promptly to remove the source of infection and to effect a cure. The longer the duration of the case, however, the more grave the prognosis. Therefore, as stated above, my own observations have led me to believe that the cure of an otitic meningitis depends on its early recognition.

15 East Fifty-third Street.

"Piano-Key" Dislocation of the Outer End of the Clavicle.—An illustrated study of this condition is published by F. Dominguez in the *Revista de Med. y Cirugia*, 1910, xv, 333. It is based on three cases from his personal experience, the only ones of the kind he has ever encountered and all within three months. A wire suture is required to hold the end of the clavicle permanently in place.

THE INDICATIONS FOR SURGICAL INTERFERENCE FOR THE RELIEF OF OTITIC MENINGITIS *

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On account of the apparently increasing prevalence of otitic meningitis, especially in children, due, no doubt to our greater ability to recognize the disease, the subject is of the utmost importance, not only to the aurist, but more especially to the physician of general practice, since he is usually the first to be consulted in the initial illness. The questions pre-eminent, therefore, for our consideration are (1) the establishment of a prompt diagnosis of otitic meningitis, still replete with difficulties; and (2) the adoption of immediate measures for its relief, an accomplishment even more perplexing than the first.

As all scientific attainment, however, is developed by slowly progressive steps, judging from the progress of the recent past, we have every reason to feel encouraged in the belief that, in the very near future, we shall have reached the goal whereby our ability to diagnose this disease promptly will be unfailing, and furthermore, the technic of surgical intervention will have become so thoroughly mastered that a favorable prognosis may be the rule, instead of the exception, as to-day. The optimistic picture here drawn for the future seems almost heresy in contrast to the pessimism manifested by the profession in the past, or even at the present time, and yet I must be insistent in asserting the belief that this outlook is only as bright as the expectant and progressive future has every right to expect, especially if the original work of Jansen, Neumann and others is to be emulated by our colleagues.

Please note the emphasis and importance I wish to place on the words "prompt" and "immediate" in their connection with the diagnosis and treatment of otitic meningitis, for, without proper appreciation of their application in this disease, the ravages of the past on human life must be perpetuated indefinitely. In consequence of the present demand, we now yield to the collective opinion that our only means of successful intervention lies in operative interference, and I will endeavor to mention the various surgical procedures incident thereto, in compliance with my obligation to this part of the symposium assigned me.

On account of the symptom-complex which so frequently confronts us, and our consequent inability to differentiate between meningitis and encephalitis, I must agree with Körner (and this is confirmed by my limited post-mortem opportunities) that the actual condition is best characterized by the term "meningo-encephalitis" instead of the word "meningitis;" and surely this does not overstate its gravity in the more severe type of this disease.

If we accept the theory that serous meningitis, as demonstrated by Quincke's lumbar puncture, is simply an increase in the amount of cerebrospinal fluid, we have a plausible explanation of the fact that in so many cases of this particular type the patients recover, when the condition is properly diagnosed and the fluid drained surgically. Furthermore, if we agree that serous meningitis is the first stage of the suppurative form, it being most difficult to determine where one ends and the other begins, we have additional reason for an early lumbar puncture, which must be followed promptly by more thorough drainage, if the symptoms are not relieved by the former.

Some serous cases presenting typical meningeal symptoms with a normal fluid under high pressure have also a circumscribed purulent leptomeningitis, the toxins giving rise to an increased cerebrospinal pressure, but not altering the fluid's physiologic consistency; here the indications for thorough drainage by operative measures are manifest. In our eagerness to relieve serous meningitis by surgical intervention we must not lose sight of the well-recognized fact that many patients will recover by lumbar puncture and removal of the focus of an aural suppuration and exposure of the dura. Exploratory operations on the brain, therefore, should be deferred until the results of the former are observed.

Much divergence of opinion exists as to the curability of a general suppurative meiningitis; the subject, however, is governed largely by the individual conception of the terms "general" or "diffuse." On this subject Heine[1] says:

> I agree with Lexer that the words "circumscribed" and "diffuse" have been differently understood by different authors. In discussing inflammation in serous membranes Lexer distinguishes three forms, the encapsulated, the acutely progressive and the general. In the encapsulated form the opposing serous surfaces are firmly bound together around the area of inflammation by fibrinous exudate and granulations. In the progressive form either the tissues fail to effect this shutting off of the focus of inflammation or the infection, at first confined, breaks through the protecting wall and spreads rapidly. Finally, the general form, in which the whole serous lining of the cavity is involved, is a further development of the progressive variety. These different forms are best seen in suppurative peritonitis, of which the acute progressive stage may be checked sometimes by operation, but the generalized form is always fatal.

Heine is of the opinion that "the circumscribed and progressive forms of suppurative meningitis are curable, but the prognosis in the generalized form is absolutely unfavorable."

Judging from the above classification it may be that some of us have accepted as identical the diffuse and progressive forms of suppurative meningitis, in which event we can readily account for the reported recoveries. I am of the opinion that generalized suppurative meningitis is incurable by any therapeutic measure at our present command; this, however, should not deter us from adopting prompt surgical intervention, from the fact that we are not yet competent to determine unqualifiedly the exact stage to which an advanced case has progressed. In other words, in a given case the meningitis may not be so generalized as the severe symptoms seem to indicate, and, in consequence, a prompt operation may relieve the patient. In any event, we are developing the subject in the right direction, and, while diversity of opinion exists as to the curability of certain forms of this disease, the conviction is unanimous that otitic suppurative meningitis can be cured only by the institution of immediate operative intervention. Briefly, then, otitic meningitis is strictly a surgical disease, just as suppurative peritonitis has long since been so recognized; and, in consequence of the growing demand for this interpretation, the profession will, sooner or later, be brought to a realization of this fact.

In the treatment of otitic meningitis, then, two objects are paramount: the first, the complete removal of

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

1. Heine: Operations on the Ear, 1908.

the primary source of infection; and the second, the complete evacuation of the intradural exudate. From the fact that the usual route of infection is through the labyrinth and internal auditory meatus, our efforts obviously must be directed toward the establishment of drainage in all cases of this nature. When prompt surgical measures are adopted many patients with "meningitis serosa," even though diffuse, will recover, but from the fact that death is caused from paralysis of the respiratory center, due to pressure, an early operation is imperative. Drainage, once established, must be maintained by the adoption of every means to this end at our command, and, even then, little hope can at present be entertained for the recovery of a patient with diffuse suppurative meningitis, when the symptoms are mainly toxic.

Whenever we have confined pus or other inflammatory exudate our first object in the line of treatment is its immediate evacuation by the establishment of efficient drainage. In otitic basal meningitis this is best accomplished by either the translabyrinthine operation, in which a coincident vestibulotomy is an essential part, or by the postlabyrinthine operation, and, in certain selected cases, it may be necessary to perform both of these operations. On this subject West and Scott[2] remark:

> It is yet too early to speak with certainty on the prospect which this operation (translabyrinthine) holds out of saving the less virulent cases of meningitis. We can say only that we have, by its use, combined with lumbar drainage, succeeded where previous experience with cases of similar type led us to expect a fatal result, and that we regard it as a method of great promise. It has two obvious advantages over postlabyrinthine drainage, namely, that the route of infection is strictly followed and that the internal meatus affords a natural drainage-tube, which is infallibly rightly placed, and leads directly to the part of the subarachnoid space which it is desired to reach. In addition there is the great gain that the primary source of meningeal infection is removed.

In localized meningitis, complicating acute aural disease, we must first perform the simple mastoid operation, taking care to remove every trace of necrotic bone, while the radical operation is necessary in cases resulting from a chronic purulent otorrhea. Great care must be taken not to disturb the barrier hastily established by Nature to inhibit further ingress or dissemination of infectious micro-organisms, and yet every vestige of bone must be removed down to the area of adhesion between the dura and bone, but not beyond these limitations.

In a former communication on this subject I pointed out the importance of always carefully opening the external labyrinthine wall for a fistulous opening, as an essential part of the mastoid operation. In severe meningitis, of whatever type, this opening must be enlarged and the semicircular canal, vestibule and cochlea opened to provide efficient drainage from the labyrinth.

Meningitis occurring by way of the labyrinthine route is always secondary to a necrotic disease of the middle ear and accessory cavities. The mode of infection, therefore, is usually through the fenestra rotunda, the fenestra ovalis, the promontory, or the horizontal semicircular canals. This invasion may also occur by way of the aqueductus vestibuli, the aqueductus cochlea, or the posterior or superior canal.

In all cases of diffuse otitic meningitis, serous or septic, the radical mastoid operation should be performed immediately. This will frequently expose the focus of bacterial invasion, manifested by eroded bone or exposed dura, through which a free incision should be made to provide for evacuation of the intradural exudate. Although a diffuse suppurative meningitis will most likely prove fatal, our only hope of relief lies in the prompt adoption of the surgical measures above enumerated, and, in addition thereto, drainage of the lateral ventricle. The form of septic meningitis which is most likely to recover is that caused by the staphylococcus.

Infections of the meninges with the *Micrococcus pneumoniæ*, in my judgment, are always fatal, and especially is this true when such infections complicate a pneumococcic otitis media, which is much more prevalent than the literature of the subject would seem to indicate. Indeed, my experience in the past few years has forced me to the conclusion that a pneumococcal aural infection is not only one of the most destructive in its ravages on the soft and osseous structures, but probably more prone to the development of secondary otitic meningitis than any other form of germ infection. In fact, the ear is so often involved during a pneumococcic, as well as a typhoid infection, and the complications incident thereto so frequently occur, that the profession should always be mindful of their intimate association. This seems especially true when we are reminded of the large number of such aural complications that are never suspected until a suddenly discharging ear reveals to the attending physician a condition replete with danger.

Then again, the ultimate recognition of these complications very frequently clears up a doubtful diagnosis in a given case, and in another forcibly demonstrates that, after all, the patient was not suffering from a so-called relapse. This pointedly illustrates the importance of a bacterial invasion of the organ of hearing in its relation to many general diseases, either as a complication or as the chief underlying, unrecognized, etiologic factor.

As in other forms of illness, we must use every means at our command to establish a precise diagnosis, not only as to the presence of meningitis, but, if possible, the exact form and extent of this disease, as successful intervention can only be accomplished by the adoption of prompt surgical interference. Our treatment and prognosis, therefore, will be governed entirely by our ability to establish a prompt diagnosis. Lumbar puncture is probably our best means of accomplishing this end, which also has the advantage of exerting a favorable influence on the cerebrospinal pressure, as in the presence of acute serous exudates this procedure (repeated if necessary) is of distinct therapeutic value.

Normal cerebrospinal fluid is absolutely clear and entirely free from all foreign matter. If, therefore, we are in doubt as to the necessity for operative interference, and lumbar puncture reveals a cloudy fluid containing cellular elements and fibrin, we are assured, in the first place, of the presence of a meningeal inflammatory exudate, and, in the second place, of a very doubtful prognosis in the absence of prompt surgical intervention.

Serous meningitis need not necessarily be caused by the various forms of bacteria, as demonstrated by lumbar puncture; or, when present, these may be very few in number, or their virulence greatly reduced, and the case may not, therefore, call for operative interference.

If the symptoms of intracranial pressure are grave a decompression operation should be performed over the

2. West and Scott: The Operations of Aural Surgery, P. Blakiston's Son & Co., Philadelphia, 1909.

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cerebellar or temporal regions, following which it may be necessary to incise the dura. In addition to this, drainage of the lateral ventricle should be resorted to. This latter procedure is often used only as a last resort, but it would probably be of greater service if used at the onset of pressure symptoms that cannot be relieved by lumbar puncture.

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THE OPERATIVE TREATMENT OF OTITIC MENINGITIS *

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My topic is the operative treatment of otitic meningitis. By meninigitis I mean here diffuse purulent leptomeningitis, that is, an acute inflammation of the soft membranes of the brain which has produced a cerebrospinal fluid varying from being slightly turbid to mere pus, and containing an excess of polynuclear cells. The so-called serous meningitis and the different forms of local meningitis are, therefore, excluded in this paper.

The operative treatment of otitic meningitis, in contradistinction to operations for other ototic intracranial complications, has made its way very slowly. It was, as you know, initiated about eleven years ago by Macewen of Glasgow, who, in his excellent work on pyogenic diseases of the brain and the spinal cord, published a report of two cases of otitic meningitis in which operation was successfully performed. I do not think, however, that these were genuine cases of diffuse purulent meningitis. Since then, several surgeons have tried surgical interference in otitic meningitis, and a small number of successful cases have been reported. But even now, one of the leading otologists in Germany, Herman Schwartze of Halle, still abstains from operation in cases of otitic meningitis, as can be seen from the last report from his clinic published a few months ago.

There are, I think, several reasons for the fact that this operation makes its way so slowly. First, surgeons often get these cases under treatment when the meningitis is far advanced and the whole state of the patient is such that one involuntary thinks of Dante's words, "Leave hope behind, all ye who enter here." Second, I think that other surgeons may, like me, have operated on a number of consecutive cases of even short duration without being able to avert a fatal issue. I myself operated on my first ten patients without success. After such an experience, it is very natural for a surgeon to abandon the operation, especially as the operative treatment of other otitic intracranial complications has yielded such unexpectedly good results.

Third—and this is perhaps the principal cause—aural surgeons, even with an extensive practice, do not see many cases of otitic meningitis. For example, an experienced aural surgeon, Dr. Dench, who read a most interesting paper on the operative treatment of otitic meningitis at the International Medical Congress last year, up to that time operated on only eleven cases of otitic diffuse purulent meningitis. In my department of the large municipal hospital of Copenhagen, a city of over one-half million of inhabitants, an average of only seven patients suffering from otitic meningitis are admitted in the course of a year, although a considerable number of real or supposed cases of otitic intracranial complications are sent to the hospital, which is open to every one, rich and poor.

The material on which this paper is based is, therefore, small, for, during the last four and one-half years during which I have operated for otitic meningitis, only thirty-three cases of this disease have come under my observation. In twenty-six of these operation was performed. I have operated on several patients who I believed, at the time of operation, had otitic meningitis, but in whom the post-mortem revealed tuberculous meningitis or edema of the meninges. I believe, however, that my material on this topic is the largest of which a report has as yet been published.

Before entering on the principles and the description of the operation of otitic meningitis I would strongly urge the importance of performing, if possible, before operation two forms of examination, lumbar puncture and examination of the acoustic and static functions of the labyrinth. Both forms of examination are not only valuable for the diagnosis, the prognosis and the etiology, but also for the treatment of this disease.

It is well known that the diagnosis of otitic meningitis is extremely difficult in many cases, and if it were not for lumbar puncture many more diagnostic failures would be made than at present. Like most other diagnostic methods, it is not infallible, but the exceptions are very rare. Its principal drawback is that cerebrospinal fluid is not always evacuated, or is united with blood, which renders the examination worthless. I have made use of lumbar puncture over 200 times and consider it, if all proper septic precautions are taken, a safe procedure; only once or twice was it followed by unpleasant consequences in the form of pains in the back and in the legs, which pains, however, were only of short duration. The more I use the lumbar puncture the more I rely on it as a diagnostic method.

My experience in the use of lumbar puncture shows that in all cases of otitic meningitis the cerebrospinal fluid is turbid twenty-four to thirty-six hours after the onset of the meningitis, but rarely earlier than twenty-four hours after the onset; it contains cells of which the majority are polynuclear. Bacteria are generally present; when they are absent the prognosis is favorable. The more turbid the fluid the worse the prognosis. On the other hand, the clearing of the fluid during treatment is a sure sign of the retrogression of the meningitis, and in several of my cases it showed itself before the brain symptoms began to clear up.

I often perform a lumbar puncture without any general anesthetic, but in cases in which I am convinced that the patient has intracranial disease I often postpone this procedure until the patient is under the anesthetic for the operation. If the microscopic appearance of the fluid leaves any doubt a microscopic examination is performed by an assistant during the first stage of the operation.

I have tried repeated lumbar punctures in a few cases, as a therapeutic agent in otitic meningitis, but have not observed any beneficial result.

The examination of the acoustic and static function of the labyrinth is also valuable, both in diagnosis and in deciding on the nature of the operation to be performed. Total deafness and the absence of nystagmus when the diseased ear is syringed with cold water, after Barany's method, point strongly to meningitis in doubtful cases, and demand the opening of the labyrinth during the operation.

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

I shall now proceed to the question whether or not operation shall be performed in all cases of otitic meningitis. My answer must be that only in a few exceptional cases, namely, those in the advanced stages of the disease, should I feel justified in advising against operation. And even then, in children and young persons suffering from otitic meningitis, a comatose state may be the result of an abscess in the brain rather than of the meningitis it has caused, for brain abscess is by no means a rare cause of meningitis, and its symptoms are often entirely concealed by the symptoms of the meningitis. Furthermore, in my experience, in fatal cases the patient seldom grows worse immediately after the operation; more frequently the brain symptoms become less pronounced, but in most cases the state remains unchanged. Thus nothing is lost by operation and the patient is given a chance of recovery.

Operation for otitic meningitis ought to be performed without loss of time. Each hour that passes before operation may be fatal. My impression is, that in a certain number of cases of meningitis, the inflammation of the membranes of the brain does not set in, as in the majority of the cases, with a sudden explosion like that of a gunpowder barrel into which a spark has fallen, but resembles rather a smoldering fire, spreading for a short time to all sides and bursting at last into an all-destroying conflagration. In such cases, if the primary disease is eliminated early, the fire dies out for want of fuel.

The elimination of the primary focus in the ear is beyond doubt the salient point in the surgical treatment of otitic meningitis, and this should be done as thoroughly as possible. This involves the opening of the labyrinth in all cases in which either the functional examination before the operation shows that it is destroyed or the examination during the operation shows that it is diseased, the most frequent sign being the existence of a labyrinth fistula. In order to get the external wall of the labyrinth well exposed for inspection it is necessary to perform a radical operation also in cases of acute osteitis of the mastoid process. It is, besides, easier to perform craniotomy over the tympanic cavity after radical operation.

After having performed a radical operation and eliminated all diseased tissue in the temporal bone, where there generally is an acute osteitis even in chronic cases, the disease being very seldom limited to the antrum mastoideum alone, there is another frequent inflammatory focus to be looked for carefully, namely, thrombosis of the sigmoid sinus. My experience proves that it is a frequent complication of middle-ear disease in these cases, the sinus being found diseased in eight out of my thirty-three cases. I think that, in a certain number of cases, it is probably the medium through which the inflammation spreads to the membranes of the brain. The presence of this intracranial complication does not, according to my experience, make this prognosis more grave. On the other hand, I believe that there are also cases in which the inflammation from the middle ear spreads explosively to all sides, reaching simultaneously the membranes of the brain and also, sometimes, the brain itself, where it forms an abscess or an acute encephalitis.

In all cases of otitic meningitis, therefore, I expose to view the whole perpendicular part of the sigmoid sinus and examine it for the possible existence of a thrombosis. It is, however, by no means an easy matter to diagnose the existence of a thrombus by ocular examination or by palpation of the sinus. Neither does the history of a case often give any hint of the presence of thrombophlebitis. For these reasons I generally make a puncture of the sinus with a Pravaz syringe. If this reveals fluid blood in two different places a little apart from each other it is highly probable that there is no thrombus present. If the syringe remains empty or if pus is extracted I do not open the sinus and expose the lateral wall during this stage of the operation, but I wait to do it at the end of the operation, when craniotomy is performed, in order to avoid infection of the soft membranes of the brain from the diseased sinus, in case it should be found necessary to open the subdural space. In these cases, as a rule, I do not ligate the jugular vein, partly because I have not faith enough in the beneficial effect of this operation in the majority of cases of thrombophlebitis and partly because I fear that ligature of the internal jugular veins produces an unfavorable circulation in the diseased brains. Furthermore, the ligature prolongs the narcosis, which is often very long, especially if the labyrinth is opened.

I now perform craniotomy by enlarging upward the bony cavity produced by the radical operation, using as much as possible a strong cutting forceps and making an opening extending 2½ inches horizontally and about 1½ inches vertically. The opening should be so situated as to expose freely for examination the following parts of the dura: first, the part corresponding to the mastoid antrum; second, that part corresponding to the attic, for the inflammation of the soft membrane of the brain occasionally starts here as a local pachymeningitis; and, third, the part of the dura which covers the posterior surface of the petrous bone, for there are found now and then small, deep-seated epidural abscesses which otherwise are easily overlooked. When loking for this form of abscess the free exposure of the sigmoid sinus, performed in the former state of the operation, is of great assistance, as the inner edge of the perpendicular section of the sinus represents a line beyond which one must not go.

The question now arises, should the subdural cavity be opened in all cases of otitic meningitis? I must at once declare that I am not able to give a decided opinion on this point at the present state of our knowledge of the subject. I think it is still a matter *subjudice*. That it should be done in a certain class of cases is beyond all doubt. These cases are the following: (1) when a fistula is found in the dura, for then there is sure to be either a pure subdural abscess or a subdural abscess complicated with a superficial abscess of the brain (what Macewen calls an ulceration of the brain); (2) when there are signs of gangrene of the dura, which shows itself by a part of the cranial surface of the dura being discolored, soft and uneven on the surface, and in which case it is highly probable that there is a suppurative pachymeningitis interna with or without superficial abscess of the brain; (3) when the subjective or objective symptoms point toward the existence of a brain abscess; this must be suspected especially when brain symptoms have existed previously to the development of meningitis, when there is slow cerebration and when there are local symptoms. It is, however, an established fact that meningitis may be accompanied by local symptoms without an abscess of the brain being present.

When the dura presents a normal appearance or is covered with superficially healthy granulations or other products of a pachymeningitis externa which do not point toward the existence of a deeper lesion of the membrane (for instance, fibrous filaments), the question

whether an incision of the dura should be made or not is, in my opinion, very difficult to decide. The incision of the dura has, of course, its great advantages and I myself have performed it in most of my cases, but experience has shown me that it also has serious drawbacks. The advantage which at once presents itself as important is the possibilty which the opening of the subdural cavity gives for this drainage and the subarachnoidal spaces, and many surgeons attach much importance to this procedure, believing it to be a most important factor in the treatment of otitic meningitis. My personal experience does not, I must confess, corroborate this view. I have in several cases drained the subdural cavity by means of iodoform gauze and found that the drainage was often imperfect, presumably because the hyperemia of the brain or the superficial encephalitis,[1] so often present in meningitis, makes the brain swell so much that it is pressed hard against the inner surface of the skull round the craniotomy opening, a phenomenon one often can observe directly after craniotomy is performed. In other cases the secretion is enormous and can be tolerated by the patient only if he is able to assimilate a corresponding quantity of fluid through his intestinal tract. Besides, while in some patients the substance of the brain is very tolerant of meningitis, in others the slightest touch produces bleeding and contusion. I am, therefore, not convinced of the advantage of draining the subdural cavity in ordinary cases of otitic meningitis.

But the incision of the dura as a routine treatment has one great advantage: it insures the operator against overlooking a subdural or a cerebral abscess, which complications now and then do occur in cases of otitic meningitis. For instance, among my operations, which number twenty-six, two were in cases of subdural and three were in cases of cerebral abscess; and in two of these the dura showed no sign of disease on its cranial side, nor did the patient in these cases exhibit any symptoms of these complications. Therefore, when the dura has not been opened the surgeon remains in uncertainty as to the existence or non-existence of a subdural and a cerebral abscess in cases in which the brain symptoms do not decrease after operation, and he must now and then be obliged, as I once have been, to open the subdural space a day or two later. This operation is, of course, very easy and of short duration where craniotomy once has been performed, but it may be performed too late to check the development of the meningitis.

It will be seen that several circumstances speak greatly in favor of the opening of the subdural cavity in all cases of otitic meningitis. But it has two serious drawbacks should no subdural or cerebral abscess be found, namely, the risk of infecting a healthy brain and of producing a prolapse of the brain. Prolapse of the brain is in aural cases, according to my experience, often a very difficult complication to deal with during the after-treatment. It easily obstructs the cavity produced by the operation, making the dressing of it difficult, and the brain substance in some cases becomes infected from the suppurating cavity of the temporal bone.

Having given my opinion on the principles of the operative treatment of otitic meningitis, I shall conclude by stating the results I have obtained.

Of the thirty-three patients with otitic meningitis who form the basis of this paper, exact diagnosis in all cases being insured either by lumbar puncture or by post-mortem examination or by the fatal termination of the disease, seven were not operated on, most of them because the patient or their relatives refused operation. They all died. Of the remaining twenty-six, the operation performed was without any result whatever in seventeen cases. In one case, that of a girl aged 7, the patient woke up at once from a comatose state and seemed on the way to perfect recovery, when suddenly, nine days after operation, cerebral hemorrhage occurred and the patient died. In two cases all signs of the meningitis disappeared entirely, but an abscess of the brain developed later and the patients died, respectively, one month and about one-half year after the operation. In the remaining six cases there was complete recovery, one patient, however, having still a prolapse of the brain covered with epidermis one year after operation. To illustrate the benefits of the operation I will give a short history of one of these cases.

A woman, aged 28, was sent to my department last year after having suffered for a few days from headache and drowsiness, accompanied by fever. She lay in a deep sleep, from which she could be roused only with difficulty, showing signs of slow cerebration, with a pulse of 50. There was complete paralysis of the right oculomotorius and a slight central paresis of the left facial nerve. There was a chronic suppuration of the right middle ear with no mastoid infiltration or tenderness. Neither rigidity of the neck nor the sign of Kernig was found on admission, but both appeared two days later. The lumbar puncture yielded a very turbid cerebrospinal fluid, which contained numerous polynuclear cells, but no bacteria. Radical operation of the middle ear was performed at once with craniotomy incision of the dura and incisions of the brain in different directions, an abscess being suspected, but not found. The next day this markedly slow cerebration changed to excitation, which lasted for some time. Four days later the cerebrospinal fluid was almost clear and the patient was ultimately perfectly cured, a cerebral prolapse which developed after the operation disappearing again entirely.

Such a case is a good illustration of the beneficial effect of the operative treatment of otitic meningitis in some cases. This young woman was the eldest of my patients who recovered, the others being mostly young persons about the age of puberty. In several cases the symptoms indicated a very serious disease of the brain and the turbidity of the cerebrospinal fluid was in most cases very pronounced, but in all the cases the meningitis had been of only a few days' duration.

I must finish this paper, which I have endeavored to make as short as possible, by urgently recommending that you never consider a case of otitic meningitis as a *noli me tangere*, but that you operate without loss of one of those precious moments on which may hang the life of a human being.

1. In some cases I excised a piece of the brain and had it microscopically examined, with the result that there was found no evidence of encephalitis.

ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. DENCH, SMITH AND MYGIND

DR. NORVAL H. PIERCE, Chicago: Our distinguished guest has handled the subject much more simply than we in America are accustomed to regard it. I listened attentively and endeavored to understand on just what symptoms he bases the diagnosis of a general purulent meningitis. I believe it is very important to maintain a difference in our minds between serous meningitis and purulent meningitis. On this point depends what Professor Mygind said regarding the incision of the dura. My opinion is, or rather I accept the opinion, that a serous meningitis is nothing more nor less than a collateral edema due to the action of toxins on the fluid and tissues constituting the sub-dural space, resulting in an increase of the cerebrospinal fluid. A purulent meningitis, on the other hand, is an entirely different thing; a

purulent meningitis has to do with the action of living micro-organisms on the blood vessels and the perilymphatic spaces accompanying these vessels of the meninges—especially of the pia, which provides vessels and perivascular lymph spaces which penetrate the brain substance—so that in all cases of purulent leptomeningitis we have an encephalitis as well. It is impossible to differentiate clinically between certain forms of serous meningitis and purulent meningitis. Fever, pulse, stiff neck, general condition, slow cerebration, delirium, are to be found in both classes; nor can we place absolute dependence for our differentiation on lumbar puncture. You may get a cloudy fluid very rich in leukocytes on lumbar puncture and yet have a serous meningitis that is due to a localized purulent focus within the epidural space which has been walled off. The corpuscular elements sink to the bottom of the cerebrospinal sac as they would in a test tube. That we may have a cloudy fluid on lumbar puncture in cases of serous meningitis is abundantly proved by the observations of Koerner, Alexander, Voss and others.

Our visitor has said that he is careful to examine the static functions in order to ascertain whether the labyrinth is involved in the purulent process. Undoubtedly this is very important, but we must also remember that if he uses this in support of his position that he has to deal with a general purulent meningitis, his deductions may be erroneous. The cases in which the meninges are invaded by way of the labyrinth have no tendency *per se* to become diffuse purulent meningitis; their tendency rather is to become localized and encapsulated.

Now regarding treatment, a serous meningitis may be due to suppuration outside the cranial cavity, as in acute otitis media in children; it may be due to a localized purulent focus inside the cranial cavity but outside the dura, as in extradural abscess; or, it may be due to a purulent focus inside the dura which has become walled off. When we can remove the irritative focus we cure the collateral edema. Now, are we not in great danger in such cases following immediately the operation on the mastoid of incising these dura, in an area that is already highly septic (because most operators recommend puncture of the dural sac from the mastoid wound), of changing a simple serous meningitis into a diffuse purulent meningitis by introducing micro-organisms within the subdural space? At least this is one of the dangers of which we must beware.

DR. J. A. STUCKY, Lexington, Ky.: Notwithstanding the eminence of the essayists and their great experience, their care and judgment and scientific ability, the subject under consideration still remains one of the unsolved problems, but undoubtedly we are progressing, and are saving more meningitis patients to-day than we did five or ten years ago. I see a great many cases of meningeal irritation of otitic origin, the result of long neglected ear troubles. A few years ago I spent some time with Ballance at London and came home enthusiastic for his teaching; out of 17 carefully observed and recorded cases I have seen 3 or 4 recoveries. As Dr. Pierce has said, in the question of diagnosis of cerebral edema (and I may say that I believe in a serous meningitis; that the serous form is simply a prepurulent stage), we may have more than one cause of infection. No one has mentioned the danger of confusing what our presiding officer called a meningismus with a meningitis. We may have a toxemia that produces all the symptoms of the serous form, or a diffuse meningeal irritation, or a meningitis; I have seen that from intestinal toxemia. We know that there is no disease that locks up the secretory and excretory functions of the body like a disease of the ear, and in our efforts to diagnose these cases by exclusion we must not forget the possibility of intestinal toxemia producing a meningeal irritation. Neither of the essayists, nor Dr. Pierce, has mentioned the possible good results that may come from the administration of large doses of hexamethylenamin in these cases of suspected meningeal irritation. I think it is well to consider that in the treatment. I endorse with emphasis what our distinguished guest has said—give your patient a chance—I.o case is hopeless—operate early and give drainage.

DR. C. M. BROWN, Buffalo: It seems to me that Dr. Dench struck the keynote when he said that the important thing was early diagnosis. I would call attention to one symptom that has not been referred to, that is restlessness or twitching of the muscles of the face. Alexander claims that this is more important than stiffness of the neck. I would like to ask Dr. Dench if he has observed this?

DR. R. P. SCHOLZ, St. Louis: I believe that all authorities agree that in cases of suppurative meningitis of otitic origin, operation is indicated, and that patients with serous meningitis, or as one of the speakers has called it, collateral edema, may recover without surgical interference. In rare cases Nature often brings about restitution where there has been suppuration of the labyrinth with more or less meningeal involvement. I believe the post-mortem room furnishes the best opportunity for study of this class of cases, for here we see not only the cases resulting in death from meningitis, but occasionally find a case in which there is evidence of an old healed meningitis. I have observed that in cases of meningitis, exudate is frequently found about the lamina tectoria cerebella and believe that this and congestion occludes the foramen of Magendie, thus giving rise to increased ventricular pressure. I would like to ask Prof. Mygind if he too believes that all such cases in which there are inflammatory changes (exudate, etc.) about the foramen of Magendie, are not necessarily fatal.

DR. OTTO GLOGAU, New York: A patient came into the office with the statement that he had been in a hospital, had had a mastoid operation, had been neglected and there was development of granulation tissue about the wound. I called in consultation another otologist, who decided that it was exuberant granulations, while I had suspicion of a malign growth and removed a piece for microscopic examination. Dr. Neuman of Vienna saw the case, and without looking at the mastoid wound decided that an operation should be done, the patient having all the symptoms of otitic meningitis; but the next day when I took off the dressing he decided that it was an inoperable sarcoma of the mastoid and it turned out to be a spindle-celled one. I asked Dr. Coley for some fluid and learned that he had seen the case before, a fact which the patient had not told us. The patient had, a few months before, a slightly swollen gland underneath the mastoid, attended with pain, which was mistaken for mastoiditis and operated on. He developed a sarcoma which had encroached on the dura and from this growth was produced an attack of otitic meningitis.

DR. CULLEN F. WELTY, San Francisco: It has been demonstrated that in 65 or 75 per cent. of all cases of meningitis infection comes by way of the labyrinth. This is really startling; but there are tests which, if made in detail, will tell the exact condition of the individual labyrinth. Should this examination be put off the patient may be so ill that a satisfactory examination cannot be made later.

The examination chart of the Vienna school of otology is as follows:

A.	B.	R. L.	A.	B.
.	.	Convers.	.	.
.	.	Whisp.	.	.
.	.	Acumeter	.	.
.	.	Weber	.	.
.	.	Rinne	.	.
.	.	Schwabach	.	.
.	.	C_3	.	.
.	.	a_1	.	.
.	.	C_4	.	.
.	.	Galton	.	.
.	.	Stenger	.	.
.	.	Watch on bone	.	.
.	.	Acumeter on bone	.	.
.	.	Vertigo	/	/
		Tinnitus		
		Spont. Nystag.		
		Galvan. Nystag.		
		Caloric. Nysteg.		
		Nystag. after turn		
		Equil. Dist.		
		Lucae-Dennert		
		Hearing tube		
		Fistula Symptom.		

If from examination a latent labyrinthitis is diagnosed and a meningitis develops, it is clear that the complete destruction of the internal ear is essential; in other words, the Neumann operation. However, if a meningitis develops and the labyrinth is intact, one knows that a different operation should be done. The possibilities in such cases are much lessened—one has much more definite information and can proceed accordingly.

The Vienna school of otology has certainly reduced the mortality of meningitis in this very way. They further teach and show conclusively that one is not qualified to do the radical ear operation unless he is prepared to do the complete exenteration of the labyrinth, and that a patient with a labyrinth suppuration should not be operated on at all unless the labyrinth is destroyed at the time the mastoid operation is done.

A few of these points are very well illustrated in a recent case to which I was called in consultation. The patient had a marked nystagmus to the opposite side; Weber to the good ear, and as I supposed, some hearing. Fistula test was negative. By the syringing with cold water, I concluded that the nystagmus was increased; this, however, was questionable; at all events my *confrères* agreed that such was the case. A diagnosis of circumscribed labyrinthitis was made and the radical operation done; at operation a fistula of the horizontal canal was found, the facial uncovered by caries, all of which was in perfect accord with the diagnosis. Three days later the patient was comatose, with stiff neck and painful spine. The labyrinth examination was made again and more accurately. There was no hearing and no increase of nystagmus from cold water, Weber to good ear. At this time the family would not allow further operative procedure. The patient recovered, she had a serous meningitis and it was induced by the operative procedure. The labyrinth should have been removed at the time of the first operation. So it is plain how important an accurate examination would have been in this particular case.

DR. E. B. DENCH, New York: With reference to Dr. Brown's question, I have not observed the restlessness and twitching of the facial muscles spoken of. I have seen beneficial effects follow repeated lumbar puncture. In reference to the exenteration of labyrinth in case of fistula, I presume Dr. Mygind means only where there are meningeal symptoms.

Puncture of the lateral sinus as a diagnostic measure has not proved satisfactory in my experience; one may go through a parietal clot and get fluid; I would rather open it than make a puncture in it. I agree with him as to the danger of ligating the internal jugular vein. In one case I think I got a death in this way.

Whether or not the dura shall be incised depends on the severity of the symptoms; if mild let the dura alone, but if severe, with high temperature, and pressure symptoms, you must incise the dura and pack it off.

In reference to Dr. Pierce's remarks as to the danger of the decompression operation on account of infecting previously healthy brain tissue, it seems to me that if it is done far forward, through the thinnest part of the squama, you can keep well away from the infected area and I do not think there is very much danger if you are careful to keep the wound in the mastoid thoroughly packed.

DR. S. MACCUEN SMITH, Philadelphia: I shall occupy only a few minutes to somewhat justify my digression from the subject of this symposium to state that I feel it is of the greatest importance for the general physician to keep the following cases in mind.

About three weeks ago, within a period of thirty-six hours, I was called to see three cases of otitic meningitis in adults, all of which proved fatal. One of these patients died before my arrival; two died within half an hour of my seeing them. In none of the cases was the ear recognized as the underlying etiologic factor sufficiently early to warrant operative intervention.

In one case I freely incised the membrana tympani and evacuated a quantity of pus which escaped under considerable pressure. This I did with a view of clearing up the diagnosis, about which there was still much difference of opinion. None of these cases complained directly of pain in the ear, but they did complain of considerable head pain on the corresponding side, mostly over the temporal region, which was looked on as neuralgia. In only one of the cases did a discharge appear from the ear before death, through a spontaneous rupture of the membrana tympani.

DR. HOLGER MYGIND, Copenhagen, Denmark: There is not a single symptom, subjective or objective, which is pathognomonic of meningitis. I have seen fatal cases where, until death, there was no rigidity of the neck and no Kernig sign, although the sign of Kernig is almost the most certain that we have, but I have seen two cases in which the sign was absent until death, and on the other hand I have seen cases of hyperemia of the brain in which it was present, though only very slightly. So, I think there is not a single certain subjective or objective sign. There is only one certain method of diagnosis, and that is by means of lumbar puncture.

Another question is, What is serous meningitis and what is purulent meningitis? Well, I think we shall not waste much time discussing that, because it is merely a matter of words. Let us first agree on what is a serous meningitis. If you go to three different competent men you will hear three different opinions as to what serous meningitis is. If you want my opinion I will say this: It is an acute disease of the brain with symptoms, subjective and objective, of meningitis, where the spinal fluid is clear but containing polynuclear cells when examined under the microscope. That is my definition. To call a case serous meningitis when there is no serous appearance of the fluid is confusing; so I think this definition I have given may help. I will not say it is the right one, because I might come to the next meeting with a different opinion; it is *sub judice*. We are in the first stage of our knowledge and are experimenting. If the fluid is turbid and contains an excess of polynuclear cells we have evidence of an inflammation of the meninges. Dr. Pierce may say that it is localized. Well, I have seen several cases of localized meningitis and in not a single one was there any alteration of the cerebrospinal fluid. I will not say that such cases do not occur. As I said in my paper, the puncture is not invariable, but the exceptions are rare. So I think we are justified in calling such cases as I speak of serous meningitis. This is a matter of opinion, which is, of course, not of so much practical importance, but the question of how to treat the case is of great importance.

I have been much interested in hearing the experience of Dr. Dench and the other gentlemen on this matter, and I am prepared to alter my opinion. If Dr. Dench can show me a proceeding by which I can prevent the production of a prolapse, then I shall not be so afraid of opening the subdural space as I have been lately. But, as I told you, I operated in nearly all my cases in that way in the beginning, though my experience has told me that the proceeding is not without danger.

A POSSIBLE DIFFERENTIAL SIGN BETWEEN CARDIAC DILATATION AND PERICARDITIS WITH EFFUSION *

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In attempting to develop a differential sign I wish to acknowledge the dangers of generalizing from my limited material and of interpreting post-mortem findings as clinical signs.

While studying the details of the mechanics of the support of the normal and pathologic heart, some relations between the heart, right lung and liver turned my attention to the changes in the position of the liver due to dilatation of the right heart and to pericarditis with

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effusion. On analysis these changes seemed to be due to certain physical forces producing strains on given anatomic structures. As the nature and direction of these stresses are constant, varying only in degree, their effect should also be constant, varying only in degree. In the two lesions the physical forces present differ in that the support rendered the liver by the inferior cava through its connection with the heart and the connective tissue structures extending from the heart to the neck, is applied farther to the right in dilatation than in pericarditis. This difference in support of the liver may, when pressure is applied from above, cause a displacement of the liver to a degree possibly sufficient for a differential sign. The differential sign in cardiac dilatation is a high liver with a narrowed area of lung-liver relative dulness, and in pericardial effusion, a low liver

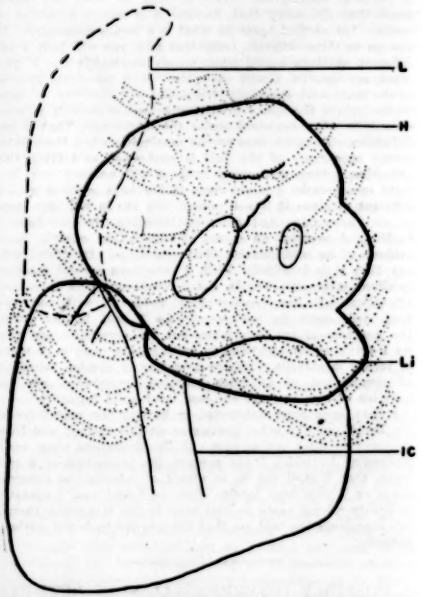

Fig. 1.—Mitral stenosis (Case 1) dilatation of left auricle, right ventricle, and auricle; position of heart (H) above reaching first rib, below, tip of ensiform cartilage, to left 9.5 cm., to right 8 cm.; right lung (L) 6.5 cm. to right of midsternal line, lower border in front in fourth interspace; liver (Li) enlarged, right lobe high, at fourth rib, hepatic veins open into right auricle at highest portion of right lobe, left lobe depressed; inferior cava, (IC) displaced to right with convexity to right.

with a narrowed area of lung-liver relative dulness. This possible differential sign pertains only to large cardiac dilatation involving the right heart, from which a differential diagnosis of pericarditis with effusion is often most uncertain.

Full details leading to the essential physical and anatomic reasons for this difference in the position of the liver are too numerous to be given in a paper of this nature. Consequently the main facts will be stated, leaving details for future publications.

The material was fixed in formaldehyd solution, sectioned, measured, and each organ projected in a front and side view. In this way the position of each organ and its relation to neighboring organs can be quite accurately studied. The strain on certain parts of organs can also be determined by considering the direction of parts in the light of the forces at work.

Examples of extreme development of given conditions often call attention to principles which might otherwise be overlooked. Consequently two case will be described: first, a case of extreme dilatation of the right heart due to mitral stenosis; second, a case of extreme collapse of the heart due to pericarditis with effusion.

DESCRIPTION OF CASES

Points of Interest in Case 1

Sternum and ribs markedly depressed.

Heart as a whole displaced slightly into left thorax.

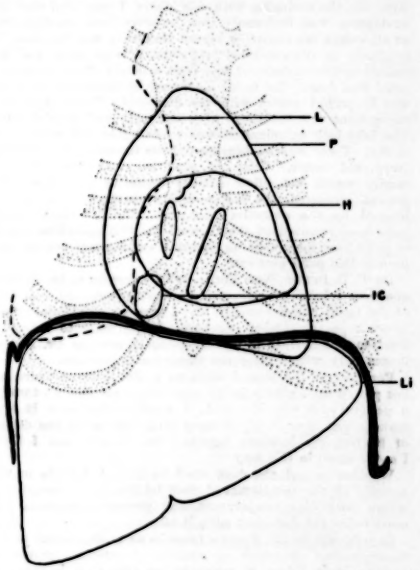

Fig. 2.—Pericarditis with effusion (Case 2); pericardial sac, P (dilatation not shown); heart, H (collapse cannot be shown; right lung (L) slightly displaced to right; pleural adhesions which have been pulled downward by pericardial pressure; liver (Li) displaced downward, upper surface of right and left lobes in almost same plane; inferior cava, (IC) not shown, but runs in almost a straight line.

Valvular openings actually lower than normal but when located in terms of ribs they are only slightly displaced, especially when the size of the heart is considered.

Left ventricle about normal size.

Left auricle greatly dilated. Greater portion of right wall in front of the root of right lung.

Right ventricle greatly dilated. Has pushed left lobe of liver downward.

Right auricle greatly dilated.

That portion of inferior cava above diaphragm dilated to form part of the right auricle.

Auriculoventricular wall runs in almost a straight line from diaphragm to root of left lung; this includes a portion of the wall of the left auricle.

Hepatic veins run in almost a perpendicular direction and open at the highest portion of the cupola of the right diaphragm into the right auricle.

Inferior cava dilated, displaced to right with convexity to right.

Liver (enlarged) has been pushed to right by the dilating right auricle and inferior cava. The right lobe has been held by the walls of the right auricle and inferior cava. This is shown by direction of walls and the course of the hepatic veins. Right lobe much higher than left—cupolated effect. Right lung pushed by left and right auricle upward, outward and backward.

Points of Interest in Case 2

Sternum and ribs only slightly depressed.

Heart swings near median line.

Valvular openings only slightly displaced.

All heart chambers collapsed.

Inferior cava above diaphragm stretched and that portion within the pericardium collapsed; near median line; congested but not greatly dilated.

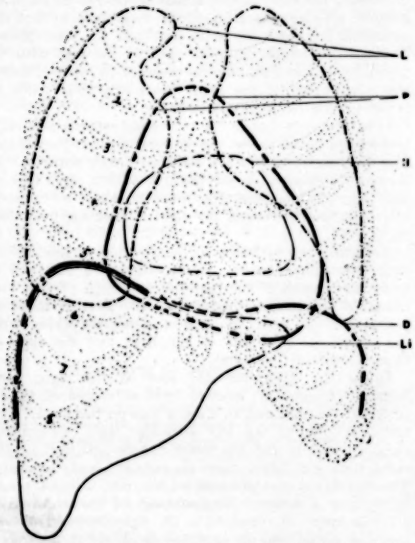

Fig. 3.—Pericarditis with effusion and dilatation of right heart (H); outline of pericardium (P) shown; liver (Li) at fifth rib, right lobe slightly higher than left; D, diaphragm; L, lung.

Auriculoventricular wall almost a straight line.

Liver displaced downward; right lobe not held up as in Case 1; right and left lobe in almost the same plane.

Right lung pushed outward and backward by the pericardial sac; pleural adhesions prevent easy displacement of lung; these adhesions show signs of downward drag.

COMMENT

These findings lead one to believe that the attachment of the pulmonary veins to the connective tissues and other structures about the root of the lungs and the auriculoventricular wall attached to the large vessels and through the left auricle to the root of the lungs play an important rôle in the support of the heart. When the right heart is markedly dilated the auriculoventricular wall runs in almost a straight line from the diaphragm to the root of the left lung, thus indicating the support of hydraulic pressure and stress transmitted from diaphragm to the root of the left lung. The right wall of the right auricle and to some extent the right wall of the pericardium transmit to the root of the right lung a portion of the stress from the diaphragm. Fibrosis incidental to cardiac lesions increases the strength of the auriculoventricular wall.

As the heart dilates the central tendon of the diaphragm is lowered; the weight of the liver and the resistance offered the dilating heart are referred to the walls of the right auricle and the auriculoventricular wall, thence to the root of the lungs and to the neck. Doubtless the column of blood materially supports the vascular and cardiac walls. The support thus rendered the liver is applied in Case 1 at the openings of the hepatic veins in the inferior cava. The support thus given the liver prevents the actual depression of the

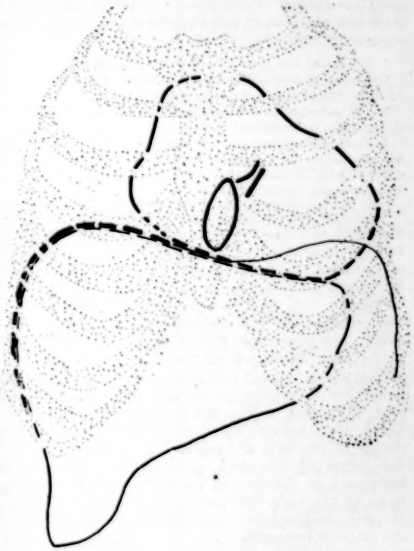

Fig. 4.—Aortic stenosis; right heart slightly dilated; liver very large and high.

right lobe to the same degree as that of the left. Consequently the right lobe is pulled up, producing the high cupolated effect. As the inferior cava dilates, the openings of the hepatic veins are pushed to the right and finally occupy the highest portion of the liver, which in Case 1 is the cupola of the right diaphragm.

Movements due to the dilatation of the heart, including the right heart in Case 1, are:

1. Descent of the sternum and ribs.
2. Descent of the heart and liver.
3. Apparent elevation of the right lobe of liver.
4. Displacement of the inferior cava to the right with convexity to the right.

In the fetus the following relationships are found:

1. Sternum high, ribs horizontal.
2. Right heart small.

3. Liver bilobed, two lobes of equal height.
4. Inferior cava near the median line with convexity to the left.

As development of the fetus to maturity advances the following changes are noted:

1. Descent of sternum, ribs in oblique position. The acquired descent of the ribs doubtless accounts in part for the apparent higher position (in terms of ribs) of the liver in adults as compared to the foetal position.
2. Descent of heart and liver.
3. Right heart enlarges.
4. Left lobe of liver atrophies and occupies a lower position, right lobe occupies a higher position.
5. Inferior cava moves to the right, becomes straight or slightly curved with convexity to right.

The movements described in pathologic dilatations of the right heart are similar in nature to the normal movements noted during development of the fetus to maturity. In fact, they seem to be a continuation of the same movement. Consequently it seems reasonable to state that as the right heart dilates the following changes occur:

1. The heart and liver are displaced downward.
2. The right lobe of the liver is elevated with respect to the left lobe, the ribs, and the right heart.
3. The inferior cava moves to the right, and its convexity to the right is increased.
4. The sternum and ribs are depressed. This depression of the ribs causes an apparent elevation of the right lobe of the liver, as high as fourth rib. This apparent elevation does not depend on the size of the liver.

In dilatation of the right heart the liver is actually depressed as measured by vertebræ, but apparently elevated as measured by ribs. As this changed relationship of the liver apparently depends on the same principles as the normal relationship of the liver, it is reasonable to assume that the apparent elevation (with respect to ribs) of the liver in dilatation of the right heart is constant; or a provisional general statement may be made, as follows: Dilatation of the right heart actually depresses the liver; the left lobe of the liver is depressed more than the right, producing a high cupolated right lobe; right lobe of liver due to depression of the ribs is higher than normal, apparent elevation; the degree of change in the form and position of the liver depends on the degree of dilatation of the right heart. Or the movement of the liver in markedly pathologic enlargement of the right heart seems to be a continuation of the normal movement occurring in the development of the fetus to maturity.

In pericarditis with effusion different physical forces are at work. Here the heart and venæ cavæ are compressed by the pericardial pressure and cannot dilate to the same degree as they do in the absence of pericardial pressure. The dilatation of the heart in pericarditis with effusion is most probably in many cases a postmortem phenomenon, developing as the autopsy progresses, and due to the congestion of blood in the large veins and lungs flowing into the heart as the pericardial pressure is removed. To be sure, the myocarditis present in pericarditis favors dilatation, especially if the pericardial pressure is low owing to weak pericardial walls. Again, the heart may be dilated before the effusion developed. In general, the physical forces in pericarditis tend to keep the heart at the same size as it was when the effusion began to develop, or at a diminished size. The inferior cava remains in its normal position or may be pushed to the left by the descent of the liver. The dilating pericardium extends to the right over the diaphragm a distance depending on the degree of dilatation and the intrapericardial pressure tends to push the liver down. The degree of displacement of the liver depends, of course, on the degree of pericardial pressure. Here the liver has only its normal support.

The inferior cava remains near the median line in a posterior position. Consequently the right lobe of the liver is deprived of the support rendered in Case 1. In pericarditis with effusion the right lobe of the liver is displaced downward approximately the same distance as the left lobe (without the apparent elevation as in cardiac dilatation). The right and left lobes of the liver are more nearly on a level or tend to assume the position found during fetal life. The sternum and ribs descend relatively the same distance as the liver. Here the liver is actually lower without the apparent elevation. A provisional general statement may be made as follows: Pericarditis with effusion tends to produce (or actually does produce) the following conditions: dimunition in the size of the right heart; actual depression of the liver without apparent elevation of the right lobe so that the right and left lobes are more nearly in the same plane; displacement of the inferior cava to the left with its convexity to the left. Or, in pericarditis with effusion, the relationship of the right heart and liver tends to revert to that found in fetal life.

It is thus seen that in the two conditions diametrically opposite physical forces are at work, the cardiac dilatation tending to produce a relatively high position, the pericardial effusion, a low position of the right lobe of the liver. A difference of as much as two or more interspaces in the position of the right lobe of the liver may occur.

Naturally the variation in the position of the normal liver is of importance. In the literature reviewed it seems that much of the material on which present statistics of the normal position of the liver is based is pathologic, and that the subject needs reworking with the pathologic positions of the liver and the type of thorax constantly in mind.

In cardiac dilatation the root of the right lung remains at about its normal level as compared to the vertebral column, and in Case 1 was on the upper, posterior portion of the left auricular wall. When the right auricle dilated the lower anterior portion of the right lung was lifted upward, outward and backward. The downward displacement of the ribs without a corresponding downward displacement of the right lung gives an apparent elevation to the right lung. There is, then, an actual and an apparent elevation of the lower, anterior portion of the right lung.

In pericarditis with effusion, owing to the small left auricle, the root of the right lung is not displaced to a degree corresponding to that in dilatation. The lower, anterior portion of the right lung is not lifted as in dilatation, but pushed by the pericardial sac outward and backward. The downward displacement of the ribs gives an apparent elevation (if pleuræ are adherent the lung follows the ribs).

In cardiac dilatation the real elevation of the lower anterior portion of the lung border serves to diminish the area of lung-liver relative dulness. The degree of narrowing of this area varies from what might be called a diminished area to almost complete absence of relative dulness. The relative elevation of the liver places this area of dulness high, fourth rib.

In pericardial effusion the liver is pushed down proportionately more than the lower border of the lung is

elevated, so that the area of lung-liver relative dulness is narrowed or obliterated and occupies a lower position than it does in cardiac dilatation. If the pericardial pressure is sufficient to push the sternum and ribs down the liver is also pushed further down, and consequently does not alter the relationship as described. Or, the differential sign should be, in cardiac dilatation, a high liver with a diminished area of lung-liver relative dulness, fourth rib; in pericardial effusion, a low liver with a diminished area of lung-liver relative dulness, sixth rib.

The differential sign is composed of two factors, the position of the liver and the presence and position of a diminished area of lung-liver relative dulness. Of these the position of the liver is most important, for the reason that it is more easily detected in corpulent patients in whom the lung-liver relative dulness may be too narrow for detection. The position of the lung-liver relative dulness is more important than the fact that it is narrow. As the position of the relative dulness depends on the same forces which displace the liver the absence of or failure to find the relative dulness should not materially detract from the value of the sign. Owing to the physical forces causing the change in the lung-liver relative dulness this area must vary from a diminished area to an area of dulness too narrow for detection.

In cases of moderate cardiac dilatation and pericarditis with effusion the changes in the position of the liver and the lung-liver relative dulness cannot be developed to a degree sufficient for a clinical sign. But as the physical forces at play are essentially different in kind and effect these forces should develop in advanced cases a displacement of the liver sufficiently well marked to constitute a differential sign. As this sign becomes more and more marked as the lesions develop, it reaches its greatest development at a time when differential diagnosis is most difficult.

ABSTRACT OF DISCUSSION

DR. HAVEN EMERSON, New York: I believe that it is impossible to get the sign referred to with the patient in the dorsal position, or with the patient on his back on a table. In the dorsal position it is not possible to verify experimentally dilatation of the heart; but in the horizontal it is possible to verify by experimentation this condition in animals, the lower animals. What Dr. Calvert has presented to us should prove a very valuable diagnostic point if it could be verified by observation.

DR. W. J. CALVERT, Dallas, Texas: In the matter of experimental proof there are a number of difficulties to be considered. There is only one animal, so far as I know, having the same anatomic arrangement of the pericardium, namely, the monkey. Cardiac dilatation which causes a change in this relationship, it seems to me, must be slowly produced. There can be no question as to the sign that was produced; it was shown by cross section work on the cadaver, the section being treated with formol and reproduced. I have not had the opportunity to examine clinically many of these cases. I do not see how the position of such patients can materially influence the findings.

Leprosy in Colombia.—An article by Dr. F. Arteaga in the *Repertorio de Med. y Cir.* of Bogota states that out of the 3,031 lepers in institutions in the state of Colombia, 142 are between 3 and 9 years old; 1,265 other lepers live at home. The total for the country is thus 4,296 to a population of 4,303,000. He comments on the fact that cretins seem to escape leprosy, and suggests that possibly their serum might be utilized in serotherapy of leprosy.

NEURALGIAS AND FUNCTIONAL DISTURBANCES ARISING FROM INFECTIONS IN AND ABOUT THE TONSIL*

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MINNEAPOLIS

Disturbances now commonly attributed to infected tonsils may be grouped under three heads, as follows:

1. Acute and chronic tonsillitis (symptoms in the tonsils themselves).

2. Diseases of the contiguous mucous membrane, that is, pharynx, larynx, trachea, bronchi, Eustachian tube and middle ear, arising from the pouring out of infected secretion from the tonsillar crypts.

3. Remote secondary infections, such as rheumatic arthritis, pericarditis, etc.

To these three groups there should be added a fourth not commonly attributed to infected tonsils, but which, it is hoped, this paper will demonstrate should be so ascribed, namely:

4. Local infections involving structures in the neck contiguous to the tonsil, giving rise to symptoms in this region, presumably, through involvement of nerves, often, by direct irritation or inflammation, but, sometimes, through reflex involvement, resulting in neuralgias and functional disturbances.

1. The first group was, until a comparatively recent period, the only one recognized.

2. The part played by the tonsil, when diseased, in the production of inflammations in the contiguous mucous membrane of the pharynx, Eustachian tube and middle ear has for some years, however, been realized and, when these structures are found diseased, aurists and laryngologists carefully investigate the tonsil to determine its condition, commonly finding it at fault. Furthermore, the complete removal of such diseased tumors has resulted in the relief of many aural, pharyngeal, laryngeal and bronchial disturbances from the fact that these septic soaked sponges have ceased to create and supply the mucous membrane with their products.

3. That tonsils which have become diseased serve as portals of entry for infections which may be later carried to remote regions of the body, resulting in other foci of infection such as rheumatic arthritis, pericarditis, pulmonary tuberculosis, uveitis and various infectious diseases formerly not attributed to that long-misunderstood and supposedly useful organ, is now well proved and generally appreciated by the profession.

4. In addition to the second and third groups of diseases mentioned, both of which are secondary diseases, that is, those which might be called metastatic or general infections and those resulting from the actual pouring out of infections from the crypts on the surrounding mucous membrane, there is another group of cases (secondary infections also) attributable to tonsillar origin but not usually ascribed to this cause, or if so, only rarely or indefinitely so assigned. It is to this class of cases that I wish to call attention. Although the symptoms may vary widely and may apparently have no relation to one another, yet they should be grouped together, for they are but different symptoms of the same affection.

I refer to the structures contiguous to the tonsil which have become inflamed or infected or involved through pressure arising from the chronically diseased tonsil in

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the substance of the neck (not to mucous membrane infections which have occurred from the pouring out of the infected material from the crypts, mentioned above) giving rise to certain definite local symptoms which may vary from an uncomfortable feeling or slight soreness felt by the patient below the ear and at the angle of the jaw, to a severe and recurrent neuralgia in the same region or running up to the ear or back of the ear, sometimes causing so much pain as to prevent sleep, or to loss of voice through involvement of or pressure on the superior laryngeal nerve which passes through this region external to the tonsil, or through involvement of the recurrent laryngeal, a branch of the vagus, which latter nerve also traverses this locality.

These symptoms may be attributable to the inflammation of the deep portions of the tonsil or to the structures contiguous to it or to a secondary infection of the lymphatic glands (so abundant in this region) into which the tonsillar glands drain. Many of these neuralgias occur as the result of pressure on or inflammation of the nerves passing through this locality, in which latter case the inflammation may become chronic, a true neuritis developing. Such would, likewise, be the case when attacks of hoarseness or loss of voice take place, despite the fact that no inflammation of the larynx is present, the function being disturbed because of involvement of the superior or recurrent laryngeal nerve.

It is obvious that the treatment of these chronic and recurrent attacks of neuralgias, etc., consists in the complete removal of these diseased tonsils even though there may be no history of acute tonsillitis or no apparent enlargement of the tonsils. Such treatment will usually reward the surgeon with prompt relief. It is equally obvious that in certain cases the symptoms may persist, owing to the continuance of the secondary inflammations either in the lymphatic glands or in the nerve. Even in such cases a gradual subsidence of the symptoms may be anticipated.

In the inspection of such tonsils it does not suffice to glance at them. The anterior pillar must be pushed back and the tonsil lifted from its bed by means of a blunt tonsil-hook, when it may be better examined. The exertion of traction on such tonsils with a hook, while causing no soreness or pain in the case of a healthy tonsil, will cause pain and flinching when it is diseased, or when the deeper structures are inflamed, and manifest soreness is a valuable guide in determining the cause of such symptoms. Frequently or usually, I have found in such cases, if the affection was one-sided, that such traction on the affected side would produce flinching, while on the unaffected side the patient would not complain.

The point about such symptom-complexes is that the patient and his physician do not attribute his trouble to his tonsil, even if the patient has been subject to acute tonsillitis. Usually, however, he is not so subject or has not been for some time, though in reality he may have a chronic low-grade of tonsillar inflammation present or only a chronic secondary inflammation in the contiguous glands or other structures of the neck.

In many of these cases the tonsil has been entirely overlooked because of the fact that the patient complains of little or no pain in the tonsil and, on simple inspection, there is nothing in the appearance of the tonsil to lead the examiner to suspect that here is the cause of the trouble. A study of the normal and pathologic tonsil with particular reference to the anatomy of the contiguous nervous and lymphatic system is necessary to the proper understanding of these reflex phenomena which owe their existence to a diseased condition of the faucial tonsil.

Normally between the pillars of the fauces on either side there are from ten to eighteen compound follicular glands arranged in folds, leading into small recesses or crypts, or as many puncture-like orifices. Such normal tonsils are not in view unless the anterior faucial pillar is drawn away, and, even then, the space exposed shows no tumor or swelling, but only slight folds of mucous membrane, nor is there to be found any detritus, pus, or decaying particles of food in the retention pockets. When a tumor exists which may be firm and fibrous, or soft and made up partially of granulation tissue, or when this tonsil contains crypts filled with detritus, pus, cheesy particles, or decaying food, there is present a diseased tonsil. Such a diseased tonsil is what some laymen call "a tonsil;" when the normal condition exists, they say that there is no tonsil present. Many physicians have likewise fallen into the habit of designating loosely as "a tonsil" an abnormal or diseased structure.

The nerve-supply of the tonsil is derived from the glossopharyngeal and branches from Meckel's ganglion. The glossopharyngeal leaves the cranial cavity by way of the middle compartment of the jugular foramen, lying in advance of and a little internal to the pneumogastric and spinal accessory nerves. On the trunk of the nerve in the jugular foramen are two ganglia, an upper, the jugular, and a lower, the petrous. The former is inconstant and both are considered analogous to the ganglia on the posterior roots of the spinal nerves. At the petrous ganglion the glossopharyngeal nerve is connected with the pneumogastric and sympathetic nerves by communicating branches. The branches of the glossopharyngeal nerve, other than the terminal lingual, and communicating, are the meningeal, tympanic, carotid, pharyngeal, muscular and tonsillar. The tympanic branch arises from the petrous ganglion and passes to the inner wall of the tympanum. It ramifies on the promotory of the typmanum, forming the tympanic plexus which supplies branches to the round and oval windows and to the Eustachian tube and communicates with the carotid plexus and with the great and small superficial petrosal nerves. The pharyngeal branches join branches from the pneumogastric, superior laryngeal and sympathetic nerves and from the pharyngeal plexus which supplies the pharynx. The communicating branches arise from the petrous ganglion and run to the superior cervical ganglion, to the auricular branch of the pneumogastric, forming a loop; and one from the nerve just below the ganglion joins the lingual branch of the facial nerve. The tonsillar branches arise from under the hyoglossus muscle and are distributed to and around the tonsils, forming a plexus from which branches to the fauces and sofe palate are derived.

Meckel's or the sphenopalatine ganglion is situated in the sphenomaxillary fossa below the superior maxillary nerve. Its sensory root is derived from the superior maxillary through the nomaxillary nerve. Its motor root is derived from the facial through the great superficial petrosal nerve which assists the great deep petrosal in forming the Vidian nerve. Its sympathetic root, the deep great petrosal nerve just mentioned, is derived from the carotid plexus. The motor and sympathetic roots enter the sphenomaxillary fossa as the Vidian nerve. Its branches are classified as the ascending, descending, internal and posterior.

The ascending or orbital branches pass through the sphenomaxillary fissure and pierce the inner wall of the orbit to supply the sphenoid sinus and posterior ethmoid cells. The descending of palatine branches are derived mainly from the sphenopalatine branches of the superior maxillary nerve. They are divided into anterior, external, and posterior palatine nerves. The anterior or large nerve passes down in the posterior palatine canal together with the posterior palatine artery and appears on the hard palate at the posterior palatine foramen. It runs forward in a groove on the under surface of the

hard palate and joins the terminal portion of the nasopalatine nerve. It supplies the gums and the mucoperiosteum of the hard palate. While in the posterior palatine canal, it gives off two branches (inferior nasal nerves) which pierce the vertical plate of the palate bone to supply the mucous membrane of the back part of the middle and inferior meatuses and the inferior turbinated bone. The external or middle palatine nerve descends in the external palatine canal to supply the tonsil and adjacent mucous membrane. The posterior palatine nerve descends in the accessory palatine canal to supply the tonsil, adjacent mucous membrane, levator palati and azygos uvulæ muscles. With the external palatine nerve it joins a branch from the glossopharyngeal nerve to form the circulus tonsillaris, a plexus around the tonsil. The internal or nasal branches supply the mucous membrane of the septum and the posterior part of the middle and superior turbinated bones and of the posterior ethmoid cells and the antrum of Highmore. The posterior branch or pharyngeal nerve runs backward through the pterygopalatine canal and supplies the upper part of the pharynx and the eustachian tube.

The lymphatics of the tonsil, which are numerous, empty into the lymphatic glands near the angle of the lower jaw and into the deep cervical lymphatic glands. The glands near the angle of the jaw are part of the chain of superficial glands of the neck which lie beneath the superficial layer of the deep cervical fascia in the posterior triangle. The efferent vessels of these glands empty into the inferior deep cervical glands. The deep lymphatic glands of the neck number from twenty to thirty and are situated along the internal jugular and subclavian veins. They are divided into a superior and inferior set. The superior set is situated along the internal jugular vein between the base of the skull and the bifurcation of the common carotid artery. These glands receive the efferent vessels from the internal maxillary lymphatic glands and some from the submaxillary lymphatic glands, the lymphatic vessels from the cranial cavity, the deep muscles of the upper part of the neck, the posterior part of the tongue, the middle portion of the pharynx, the upper part of the larynx, and the upper part of the thyroid body. Their efferent vessels empty into the glands of the inferior set. The inferior set is situated along the internal jugular vein below the bifurcation of the common carotid artery and extends outward into the subclavian triangle along the subclavian vein. These glands receive the efferent vessels from the superior deep cervical and the superficial cervical glands; the lymphatic vessels from the lower part of the thyroid body, lower part of the larynx, lower part of the pharynx, upper part of the trachea and esophagus, and lower part of the neck, and some of the lymphatic vessels from the axillary and infraclavicular glands. Their efferent vessels unite to form the jugular lymphatic trunk, which empties into the right lymphatic duct on the right side and into the thoracic duct on the left side. The right lymphatic duct is a short trunk which empties into the subclavian vein or the internal jugular veins at the junction of these veins. Its orifice is guarded by a double valve. The thoracic duct receives the lymphatic vessels from about three-fourths of the body and empties into the left subclavian vein or the left internal jugular vein near the junction of these veins.[1]

Having now briefly considered the tonsillar nerve-supply and communications and its lymphatic connections, what part should we expect the tonsil to play in producing functional disturbances and neuralgias in structures, the nerves of which become involved by inflammation or pressure?

Direct and reflex pain may arise from an infected tonsil. This pain may be referred to the side of the face and ear, the patient complaining of soreness and discomfort in this region. This can be explained by the patient's reference of irritation to the superior maxillary and auricular branch of the pneumogastric which supply the face and external portions of the ear. Deep-seated pain in the ear may be caused by irritation of the tympanic branch of the glossopharyngeal.

1. Deaver: Surgical Anatomy of the Head and Neck, 1907.

Through the tonsillar lymphatic system, inflammation of glands or other structures in the neighborhood of the tonsil may likewise give rise to pain, direct or reflex, and soreness through involvement of nerves contiguous to these secondary glands, and pain may occur in the nose, teeth, gums, hard palate, or antrum of Highmore, sphenoid, ethmoid orbit, pharynx, larynx or trachea.

A peculiar hacking cough (which may be called a reflex tonsil cough) without expectoration is also a symptom of irritation of the superior laryngeal nerve because of an enlargement of lymphatic glands of the neck brought about in the same manner as it is evinced by an enlarged thyroid gland or aneurysm of the internal or external carotid artery.

Pressure on the superior laryngeal nerve by the tonsil or by secondary swelling of glands or other structures in this locality may cause, not alone cough, but recurrent momentary attacks of cessation of respiration and also expulsion of food. As the internal branch supplies the cricothyroid muscle, the contraction of which stretches the cords, paralysis of this nerve causes hoarseness or partial loss of voice.

The inferior deep cervical glands drain the superficial cervical glands into which the tonsil feeds. An infection of one of these deep lymphatic glands may involve the recurrent laryngeal, the motor nerve that supplies all the intrinsic muscles of the larynx except the cricothyroid. Moderate pressure on this nerve causes spasm of the muscles of the same side of the larynx, resulting in dyspnea and change of voice; greater pressure causes paralysis and alteration of the voice. Other disturbances which may result are defects of hearing, tinnitus aurium, and anesthesia of the pharynx and larynx, resulting in an entrance of food into the trachea with consequent choking or difficult swallowing.

The presumption is reasonable that involvement of the pneumogastric nerve by pressure or otherwise may give rise to disturbed digestion, and the relief which follows the removal of diseased or enlarged tonsils is more likely due to this fact than because of ingestion of septic material from the tonsils, the stomach readily disposing of such material without detriment to its function. Likewise, cardiac action may be disturbed, palpitation resulting.

The report of cases which are examples of the various phenomena here suggested could be appended, but would only serve to reiterate what has already been said. The careful observer who analyses the nervous anatomy in the region of the tonsil and the lymphatic glands draining the tonsil will be able to judge as to when he may attribute to the tonsil the various diseases, functional disturbances and neuralgias, which may arise from tonsillar infection.

CONCLUSION

In conclusion I wish to emphasize the following points:

1. Pain and soreness in the neck in the region of the tonsils usually arise from diseased tonsils.

2. Neuralgias in the region of the tonsil, ear, side of head, neck, nose, teeth, gums, or antrum of Highmore, may be and frequently are caused by diseased tonsils.

3. Disturbances of function through pressure on or inflammation of nerves may manifest itself in hoarseness, in loss of voice, cough, difficult deglutition, or entrance of food into trachea, with regurgitation, or in defects in hearing, dyspepsia and disturbed heart action.

4. Such diseased tonsils may not be and usually are not large or acutely inflamed. They must be carefully

examined by the surgeon who should pull them into view with a dull hook, determine whether the crypts contain detritus, whether the tonsils are sore to such manipulation, bleed easily, or otherwise give evidence of being diseased.

5. Such tonsils should be carefully and completely removed.

6. Relief of secondary infections usually follows immediately on removal, but, sometimes, only slowly, if neuritis or secondary glandular involvement is present.

7. In certain cases paralysis may be permanent.

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ABSTRACT OF DISCUSSION

DR. LAFAYETTE PAGE, Indianapolis: Many minor disturbances not generally recognized are due to diseased tonsils. These nervous disturbances about the throat and base of the skull, such as mastoid and occipital neuralgias, functional disturbances of the facial and other nerves emerging from the base of the skull, are often cured by removing the tonsils. A neurologist referred a case to me a year ago in which he thought there might be something in the condition of the tonsils producing functional paralysis of the facial nerve. There was nothing in the superficial appearance of the tonsil to indicate disease except slight enlargement. The tonsils were removed and I found deep down in the structure of the right tonsil a large cystic abscess. The nerve soon regained its function and there was no after occurrence of the paralysis. Whether this was due to pressure from enlarged glands or septic absorption it is difficult to say. Dr. Todd mentioned spasm of the glottis as not an uncommon reflex disturbance resulting from diseased tonsils, and I can recall a number of most persistent cases of this affection and among them two very distressing cases which were relieved by removal of diseased tonsils. In one of the patients the spasms came on at 2 or 3 o'clock in the morning, after a few hours' sleep, and often persisted until the patient became unconscious from suffocation. I am convinced that the tonsillar tissues are the most frequent cause of reflex spasms of the larynx. Many of the minor disturbances of the throat like laryngeal cough, constant desire to clear the throat, pharyngeal irritation, submaxillary pains and general discomfort of the throat are of tonsilar origin and are apt to be overlooked when the tonsils present no superficial evidence of disease. These are the patients who consume large quantities of throat lozenges and are liberal patrons of "patent medicines." As a prophylactic measure I think we make no mistake in removing the tonsils in our efforts to relieve this class of minor ailments.

DR. F. E. AUTEN, Belleville, Ill.: I had two cases of facial neuralgia that cleared up after removal of the tonsils which I believe were due to septic absorption. There is an individual in Belleville today that has had neuralgia for four years and the tonsils are very sensitive, but who refuses to have them taken out because her physician has told her that they were put there by God and should not be removed. I am satisfied that there is a most urgent need for investigation along this line and that it will pay us to give a good deal of attention to these neuralgias of the face and head.

DR. JOHN D. MACLAREN, Norman, Okla.: What was the condition of the sinuses of the cranial and facial bones in these cases? Dr. Killian has shown that sinusitis may produce the same symptoms as the ones of which the essayist speaks. Have there been any investigations which show that the faucial tonsil does drain into any other part of the lymphatic system? The peritonsillar tissue is thus drained.

DR. C. F. WELTY, San Francisco: I have had several of these cases of pain about the ear and in one case that I know of a mastoid operation was done though the pain was afterward relieved by enucleation of the tonsils. I want to make a suggestion in relation to this hoarseness. I would offer another solution of that; we know that in diseased tonsils there is a certain amount of mucus and mucopus, dropping into the pharynx and larynx all the time (another indication for the tonsil operation) particularly in singers, who are not able to hold notes; this is because of the deposit of a particle of mucus on the cords, in other words they have unreliable voices.

DR. H. B. LEMERE, Omaha: A method of examination and treatment of these tonsils that has proved good in my experience, is the use of the Bier cups. The ordinary bulb provided with the instrument is not strong enough to draw out the concretions from the tonsils and I have used the suction produced by air pressure and the large bulb provided by the manufacturers. One treatment will not always relieve the condition. It is often necessary to use massage, which is very well borne by these patients. In many instances I have examined the tonsils without discovering anything at all and then with the suction apparatus I have drawn out large concretions. The method is efficient with highly nervous patients who will not submit to operation, though the treatment may have to be continued for some length of time. In some of these cases, after using suction, there is spasmodic contraction of the glottis, so that this condition should not always be ascribed to reflex action. In many of these patients the teeth and gums are at fault rather than the tonsils, and the tonsils may be infected from this source. The headaches, I think, are more apt to be due to disease of the nasal accessory cavities, therefore I do not think we should cut out the tonsils in every instance, but we should try to discover the primary infection which is not always in these organs.

DR. GEORGE F. COTT, Buffalo: In nine out of ten of these cases when there is pain in the head and face there is disease in the nasal accessory sinuses. If it is not found there it will probably be found in the tonsils.

DR. FRANK C. TODD, Minneapolis. The sinuses are of course responsible for many similar conditions. I did not mean to be understood as saying that all such symptoms are due to the tonsils but that the tonsils would produce such symptoms, and that we less frequently ascribe them to the tonsils than we should. For instance, for many years we have known that facial paralysis and other involvement of the nerves are due to enlarged thyroid gland, we have not ascribed them so much to enlarged tonsils.

POISONING FROM BITES OF COPPERHEAD SNAKES (*ANCISTRODON CONTORTRIX*)

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Recently, through the courtesy of Dr. George Tully Vaughan, I saw in a ward of the Georgetown University Hospital the following case of poisoning from the bite of a copperhead:

The patient, a boy aged 13, had been playing under a bridge, and on reaching up to one of the timber supports felt a sharp stinging pain in the index finger of his left hand. No snake was seen. The hand began to swell rapidly and the boy hastened home and was then taken to see a physician, who diagnosed the case as one of snake-bite, placed a ligature around the forearm and finger, and advised that the boy be hurried to a hospital in Washington. This was done and the boy reached Washington from an adjoining state late in the afternoon of the day on which the injury was received. At this time the child was in a condition of considerable shock, in the causation of which the pain of the ligatures and fright probably played a considerable part. The pulse was slow and of low tension. The hand and arm were much swollen and somewhat discolored. The interns who received the patient very promptly instituted the accepted treatment for such cases, namely, a free incision reaching to the bone the whole length of the finger, the application of potassium permanganate crystals to the wound so made, and liberal stimulation with strychnin by hypodermic—everything, of course, under the usual aseptic precautions. The incision disclosed a certain amount of effused blood in the bitten finger and there were a few ecchymotic discolorations of the hand. A urinaly-

sis made the day following the injury showed nothing abnormal—no albumin, blood, or blood-pigment present. The swelling rapidly began to disappear and the patient left the hospital in a few days with the wound in the finger healthy and healing by granulation. There can be no doubt that this was a case of snake-poisoning and due to the bite of a copperhead, since this is the only venomous species found in the District of Columbia or its immediate vicinity.

I have recently reported[1] another case of snake-bite due to the copperhead. This accident also occurred under a bridge. The reptile, a small copperhead, being mistaken for the common milk snake, *Ophibolus doliatus*, was carelessly picked up and inflicted a bite on the index finger. The patient was a man. There was no constitutional disturbance in this case and locally only swelling as far as the elbow with slight pain and a slight ecchymotic discoloration of the bitten finger. The day following, almost twenty-four hours after the injury and before being seen by me, the finger was incised and potassium permanganate applied. The wound so made suppurated and healed slowly by granulation.

Some few years ago I saw a patient who had been bitten on a finger by a copperhead while lifting a stone under which the reptile was concealed. Before coming under my observation the wound had been incised and treated by constant applications of a strong phenol solution. When first seen the man was in imminent danger of phenol gangrene of the bitten finger. As far as the effects of the venom were concerned, the arm was considerably swollen and mottled with ecchymotic discolorations extending to the shoulder. In this case also the constitutional disturbance had been of the most trivial character.

In a recent article[2] I have collected a series of 740 cases of poisoning from the bites of snakes indigenous to the United States. Of 566 cases in this series, in which the species of the snake causing the injury was definitely known, 97 cases, or 17 per cent., were due to the copperhead. The third of the cases mentioned above is included in these statistics, but the other two cases are not, making a total of 99 cases to be considered here. In these 99 cases there were 5 fatalities, a mortality rate of about 5 per cent.

Two fatal cases were reported by Kunkler.[3, 4] Of these the first[3] was in a boy aged 9, who received no treatment. This case is reported so very briefly that it is of little value. The second[4] was in a boy of 6, bitten on the little toe. Death ensued on the fourth day. The local symptoms in the case were: On the first day, rapid swelling. On the second day the entire limb was swollen, the foot a shapeless mass, large vesicles over entire limb, and the course of lymphatics indicated by red lines. On the third day there was gangrene of the entire foot, extending rapidly, inflammation extending over groin and scrotum. The constitutional symptoms were, on the first day, nausea, cold skin, rigors, feeble pulse; second day, high fever, rigors, constant delirium, tongue dry and red, diarrhea; third day, condition worse, delirium continued; fourth day, convulsions and death. The treatment in this case consisted in free incision, labial suction, injections of a solution of iodin and potassium iodid locally, with ammonia and opium by mouth. It is perfectly obvious that death in this case was not due at all to the primary effects of the venom, but to an engrafted septic process of severe grade. The etiologic significance of incision and labial suction on this septic process is, of course, problematic.

The three remaining fatalities in the series of 99 cases were reported to me in personal communications from Crum of Brunswick, Md., and Turner of Bluemont, Va. These physicians had not treated the cases, but knew of them and believed them to be authentic. They also expressed the opinion that the fatal result was due largely to the large amount of bad whisky consumed, and in one case, at least, to a marked condition of chronic alcoholism.

In regard to the absolute frequency of poisoning from the bite of the copperhead little that is definite can be said. Certainly the fact that I, with no special effort on my part and practicing in a large city, have seen three cases and know of two others having occurred recently in the immediate vicinity, would indicate that the condition cannot be so very rare. This reptile is widely distributed east of the Mississippi as far north as Massachusetts and possibly even Vermont. According to Stejneger,[5] Kansas, Oklahoma and Texas seem to mark the western extent of its range, and it seems to be absent from the peninsular portion of Florida. In many localities where the rattlesnakes have been completely exterminated the copperhead is still found in considerable numbers. In regard to the relative frequency of bites by this species, there can be no doubt that, as stated in my first paper,[2] for reasons there presented, the figure of 17.1 per cent. as representing the proportion of cases due to the copperhead in 566 American cases (including the rattlesnakes, the copperhead, the water moccasin and coral snakes) is entirely too low.

The attitude of the profession regarding the danger from all cases of snake poisoning in this country is sadly in need of revision. The bites of the larger species of rattlesnakes and of the water moccasin are very dangerous, but fortunately they are comparatively rare. The danger from bites by the smaller rattlers and the copperhead is certainly slight. This being true, it is very important to see that the treatment is not only necessary but that it is not positively harmful. In the 99 cases considered only one of the 5 fatalities can be properly attributed to the direct activity of the venom. One of the other fatal cases was undoubtedly due to a septic infection to which the treatment of the injury predisposed. In the remaining three cases the alcoholic intoxication, added to the venom intoxication, undoubtedly contributed to the result. Thus a corrected mortality in these cases would be about 1 per cent., certainly small enough to indicate the slight danger to life from the venom itself. As far as the harmfulness of the accepted treatment is concerned, the three cases mentioned at the beginning of this paper may well be considered in evidence. In the first case the parents were forced to take the child on an expensive and entirely unnecessary journey. The finger was then unnecessarily opened. Such incisions are not without danger of subsequent deformity. In the second case again the finger was incised without reason, with a resulting infection which might have been serious. In the third case another finger was unnecessarily opened and nearly lost as a result of phenol gangrene. My conclusion from all this is that in poisoning from the bites of copperheads we have a condition of no great rarity in the eastern states, the danger from which is

1. Willson: Washington Med. Ann., 1910, viii, 409.
2. Willson: Arch. Int. Med., Chicago, 1908, i, 516.
3. Kunkler: Med. Counselor, Columbus, 1855, i, 481.
4. Kunkler: Cincinnati Lancet and Observer, 1859, new series, ii, 662.
5. Stejneger: The Poisonous Snakes of the United States, Report of U. S. Nat. Museum, 1893, Washington, 1895, p. 337.

greatly overestimated by both laity and profession; that the local treatment is unnecessarily severe and dangerous, in that it opens up, often without due regard to asepsis, tissues which are predisposed to septic infection and tends toward producing subsequent deformity. In other words, in these cases, as usually treated, we have a condition the treatment of which is worse than the disease.

Locally the ideal treatment consists in the application of a series of ligatures between the wound and the heart, tied tightly enough to impede the return flow of blood and lymph but not to cut off the circulation and obliterate the pulse. This procedure makes the absorption of venom slower and therefore less likely to overpower the resistance of the body to the poisoning. When first seen in many cases the extremity will be ligated tightly enough to cut off the circulation completely. These ligatures should be promptly relaxed, as gangrene has occurred under these circumstances. I am fully convinced that the best interest of the patients in the majority of these cases of copperhead poisoning will be best conserved by no interference with the wound beyond the application of an antiseptic occlusive dressing. In cases in which a young child has been bitten by a large snake and comes under treatment at once, dissection of the wound and the use of crystals of potassium permanganate under every aseptic precaution would, of course, be indicated. When the case is seen after the lapse of some time, with the venom in all probability well diffused through the tissues, I doubt if this treatment does any good even in such cases, and certainly not enough to compensate for the increased danger of ordinary septic infection.

The general treatment is simple but important. The copperhead venom produces a very marked fall in blood-pressure and exerts a selective depressing effect on the respiratory center. The low blood-pressure should be treated by the administration of adrenalin by intravenous injection, if the condition promises to be at all serious. Of course, in such cases as the second and third reported above such a procedure would be highly unnecessary. Strychnin is probably as likely to be useful as any other stimulant, especially in those cases where there is a tendency toward respiratory depression. Caffein and camphorated oil would seem to be indicated on theoretical grounds, in bad cases, as in young children. The recumbent posture with the head low and external heat should be used. Bandaging the extremities, abdominal compression by a tight binder, and artificial respiration may be tried in very serious cases, but such cases will be very rare except in young children.

In conclusion I should like to urge on the members of the profession who have the opportunity of seeing these cases of copperhead bite, that they should be reported. Most of them seem like very trivial affairs, but it is for this very reason, in order to impress this fact on the profession, that they should be reported to the journals.

The Spinal Sign of Serofibrinous Pleurisy.—F. Ramond found the iliocostal and longissimus dorsi muscles constantly enlarged on the side corresponding to the pleural lesion in 76 cases of primary pleurisy and in 18 out of 24 secondary cases. The muscles below the twelfth rib can be felt much larger and more elastic on this side than on the other as the patient bends forward or to the side and the groove at the side of the spine is palpated. His communication on the subject was published in the *Bull. de la Soc. méd. des hôp.*, 1910, xxvii, 747.

ENDONASAL METHOD OF REMOVAL OF HYPOPHYSEAL TUMORS

WITH REPORT OF TWO SUCCESSFUL CASES

DR. OSKAR HIRSCH
VIENNA

In his article on the surgery of the hypophysis from the standpoint of the rhinologist, Dr. J. M. West[1] mentioned the fact that "heretofore rhinologists have been interested in the hypophysis only in a general way." Later on in his article he describes a method by which he resects the septum endonasally, thereby reaching the sphenoid, which he opens widely, and through this opening reaches the hypophysis.

Although Dr. West searched the German literature with great care concerning the operative treatment of hypophysis tumors, he neglected those publications which described the endonasal method, which was the most important to him.

In March, 1909, I published a new method[2] of endonasal operation for the removal of hypophyseal tumors. This method is based on Hajek's[3] radical operation on the sphenoid sinus and is done in several sittings. It is performed in the following way:

Operation.—Under cocain anesthesia the middle turbinate is removed at the first sitting. After a few days, again under cocain anesthesia the anterior and posterior ethmoidal cells are removed, by which operative procedure the entire anterior wall of the sphenoidal cavity is exposed. After another interval of several days, again under cocain anesthesia, the anterior wall of the sphenoid is removed *in toto*. Here one may again wait several days before beginning the last step of the operation, or as desired, may continue with the opening of the hypophyseal prominence and partially remove the hypophysis.

This is the method I demonstrated on the cadaver at the meeting of the Gesellschaft der Aerzte in Wien in March, 1909.[4]

In my first publication, and also in my demonstration, I gave reasons why my method, done under local anesthesia, should supersede the method of Schloffer.[5] My arguments in short are the following:

1. By the method of Schloffer it was impossible up to that time to remove the tumor of the hypophysis completely.

2. The removal of small portions of the tumor has been enough to influence the course of the disease favorably.

3. By my method it is possible to remove the tumor partially and so to get equally as good a result as one gets by the major surgical procedure of Schloffer.

My suggestion was taken skeptically. In the following year I had no opportunity of demonstrating the feasibility of my method on the living. But through the courtesy of Hofrat v. Wagner it was first possible for me to operate by my method on a patient suffering from tumor of the hypophysis and thus give my proposal a practical value.

History.—The patient was a woman aged 35, from Hofrat v. Wagner's clinic, who for seven years had epileptoid attacks, and for one year suffered from unbearable headaches and disturbances of sight. The Roentgen examination, made by Docent Dr. Schüller, showed an enlargement of the sella turcica

1. West, J. M.: Arch. f. Laryngol. u. Rhinol., xxiii, 288; The Surgery of the Hypophysis from the Standpoint of the Rhinologist, THE JOURNAL A. M. A., April 2, 1910, p. 1132.
2. Wein. med. Wchnschr., 1909, No. 12, p. 636.
3. Hajek: Arch. f. Laryngol., xvi, 105.
4. Wien. klin. Wchnschr., April 1, 1909, p. 473.
5. Schloffer, H.: Wien. klin. Wchnschr., 1907, pp. 621, 1075.

and an erosion of the clinoid processes, which confirmed the diagnosis of a hypophysis tumor. Inasmuch as, through the pressure of the tumor on the optic nerve, the left eye was blind and the right eye was in imminent danger of becoming so, the proposal to remove the tumor was made and accepted by the patient.

Operation.—With permission of Hofrat v. Wagner I used in this case the method of operation published by me in 1909.[5] The operation was done under cocain anesthesia endonasally and in several sittings. The course of the operation in this patient was as follows: In the first sitting I removed, under cocain anesthesia, the middle turbinate of the left side, which is an insignificant procedure. After several days in a second sitting I removed the ethmoid cells. This operation was also done under cocain anesthesia without any hemorrhage worthy of mention. After a several days' pause I resected in a third sitting the anterior wall of the sphenoidal cavity, again under a local anesthetic without pain or hemorrhage. After this operation the hypophyseal prominence, reaching deep into the sphenoidal cavity, was visible. The previously described procedures are commonly used by rhinologists in the treatment of chronic empyema of the sphenoidal sinus. The new feature in my method is the opening of the hypophyseal prominence with a chisel and the exposure of the tumor. For this operation I also chose local anesthesia. After cocainizing the nose and sphenoidal sinus with a 20 per cent. cocain solution I placed on the hypophyseal prominence a small chisel and by careful hammering made a transverse fissure in the bony envelope of the hypophysis tumor. Into this fissure I placed an elevator that is made in the form of a right angle and broke away the bony covering of the hypophyseal prominence in a rather large area. Through this opening in the bone the bluish dura became visible. Although this operation was done without hemorrhage or pain, I did not continue, as I wanted to see if this opening would not suffice to relieve the disturbances caused by the pressure of the tumor. This expectation was not realized and after several days it became necessary to lay bare the tumor itself.

I again cocainized the nose and the sphenoidal cavity with a 20 per cent. cocain solution and epinephrin and soon found the opening I had made in the hypophyseal prominence and with a knife opened the dura along the sphenoidal septum and pulled it away laterally as a flap. Immediately the gray hypophysis tumor arched through the opening into the sphenoidal cavity. I cut into the tumor with a knife and immediately a blood-tinged fluid ran from the nose and mouth. As I again examined the tumor it was smaller and pulsated at the wound margins, between which, on probing, I came into a cavity. I removed a small piece of the cyst wall and did not tampon, but merely placed a small ball of cotton in the anterior nares of the operated side of the nose.

Subsequent Course.—Immediately following the operation the patient's head felt much relieved. She was so slightly disturbed by the operation that she was able to walk with a nurse from the operating room to her ward. Her condition following the operation of March 8, 1910, remained good. She enjoys the best of health, is entirely free from headache and her temperature was always normal. The vision of the right eye improved in two days following the operation from 1/30 to 4/30, and two weeks later was 9/60; at the time of writing this paper her vision was 6/10. The field of vision also has improved greatly; the left eye remains amaurotic.

Examination of Specimen.—The microscopic examination of the excised cyst wall (Dr. Erdheim) showed hypophysis tissue; of tumor tissue there was nothing to be seen. The examination of the cyst contents showed phagocytic elements and blood pigment, a sign of an old hemorrhage.

The treatment of the above-mentioned case took more than five weeks. If one subtracts a longer pause, which was made in order to have some new instruments constructed, and if in the future one does several stages of the operations in one sitting, there will still remain two to three weeks as the necessary time to complete the treatment of a case.

As it may be possible that the progressive symptoms of a case, especially the optic atrophy, will not allow so long a period of treatment, I searched for a method in which the operation of hypophysis tumor could be performed at one sitting.

Influenced by Kocher's[6] operation, I made experiments on the cadaver to show that one could open endonasally both sphenoidal cavities and the hypophyseal prominence under local anesthesia in one sitting and reduce the danger of infection to a minimum.

This method which I will describe later is a continuation of Killian's[7] submucous window-resection of the nasal septum, but includes the resection of the rostrum sphenoidale; also the anterior wall of both sphenoidal cavities and of the sphenoidal septum, by which the hypophyseal prominence is exposed in a satisfactory manner. The technic of this method in practice would be the following:

The mucous membrane of both sides of the nasal septum is cocainized with a 20 per cent. cocain solution and infiltrated in its entire extent with Schleich solution. An incision is now made along the anterior edge of the quadrangular cartilage, through the mucous membrane of one side, down to the cartilage, and the mucous membrane is raised by means of a raspatorium, together with perichondrium and periosteum, from the cartilage and bone. The cartilage is now incised ½ cm. from the original incision and a raspatorium slipped between the perichondrium and the cartilage and carried to the posterior border of the septum; the mucous membrane, together with perichondrium and periosteum, are now raised from cartilage and bone on this side. The membranes are now held apart by a nasal speculum and in this way a medial nasal cavity formed in which one sees the bare cartilage. This is removed with one sweep of the cartilage knife and the vomer and the perpendicular plate of the ethmoid are resected with the aid of a bone forceps. Up to the present this operation is identical with Killian's submucous septum-resection.

To bare the anterior wall of the sphenoidal cavity it is necessary that the mucous membrane of the vomer where it joins the sphenoid be also separated from the bone. This is very easily done, after which the mucous membrane is separated from the anterior surface of the sphenoid on both sides as far as the ostium sphenoidale, so that the raspatorium falls into the sphenoidal cavity. Now, through this sack of mucous membrane one removes posterior part of the vomer and the rostrum sphenoidale with the bone forceps, and with several strokes of a chisel one breaks through the anterior wall of the sphenoid cavity and after removing the sphenoidal septum one sees the hypophyseal prominence in its entirety.

After opening the sella turcica and the dura of the hypophysis, respectively, the hypophyseal tumor lies free in the sphenoidal cavity.

By using this method I have opened the sella turcica on a cadaver whose skull had not been previously opened. Dr. Erdheim, an assistant at the Vienna Pathologic-Anatomic Institute, was kind enough to dissect the skull and found that by using the above-mentioned method I had made a large opening in the floor of the sella turcica without having injured any of the important neighboring organs (optic nerve, cavernous sinus, etc.)

Should the middle turbinate extend too far into the nose so that the mucous membrane of the septum cannot be separated from it far enough, they must be removed several days before beginning the real hypophysis operation.

Some time ago I operated in a case of hypophyseal tumor by the last-mentioned method (submucous resection of the septum of the nose and of the sphenoidal cavities). Up to the present time the patient's general condition is good and she is without fever.

The report of this case together with a more minute description of the operation will be published as soon as enough time has elapsed so that one can consider the effect of the operation.

NOTE.—Between the operation and the reading of proof on this paper six weeks have elapsed. The patient continues well. Vision, which before the operation was 6/6 in the right eye and 6/10 in the left, has increased to 6/5 in the right and 6/18 in the left. On June 17, 1910, I presented the patient before the Gesellschaft der Aerzte at Vienna. (*Wien. klin. Wchnschr.*, 1910, xxiii, 955.)

IX/3, Währingerstrasse 3.

CARCINOMA OF THE SPLEEN AND STOMACH, WITH UNUSUAL BLOOD PICTURE *

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M. K., male, aged 38, single, came under my care Nov. 12, 1909.

Previous History.—Patient had typhoid fever 20 years, ago, pleurisy 6 weeks previously, a slight cough for thirteen years, and a history of catching cold very easily. Previously to the pleurisy, he had apparently been in good health.

Family History.—Father, mother, six brothers and one sister all living and well.

Subjective Symptoms.—Slight cough, watery expectoration, poor appetite and poor digestion, with symptoms of fermentation, alternate constipation and diarrhea, slight and intermittent pain in the left upper quadrant of the abdomen.

Physical Examination.—Patient was emaciated (height 5 feet 4 inches, present weight 108½ pounds, highest previous weight 130 pounds, and average weight 120 pounds), extremely anemic, skin of a sallow pasty white, tongue red at the tip, beefy in appearance and coated posteriorly.

Impairment of each apex, more marked on the right side, with increased vocal resonance at both apices, bronchial breathing at the right apex and bronchial-vesicular at the left apex. At the left base there was movable dulness extending up to an inch above the angle of the scapula and to a corresponding level in front. Liver dulness began at the fifth interspace and extended in the mid-clavicular line to 2½ inches below the costal margin. Stomach tympany began at the seventh rib and extended to the costal margin. Abdomen was somewhat distended. Spleen and kidneys were not palpable. Heart dulness apparently did not extend to the right. There were no murmurs and the pulse was 120, small in volume and regular. Temperature 100.4 F.; urine red, sp. gr. 1.023, acid, no albumin or sugar; microscopic examination showed a few red blood cells, very few hyaline casts and oxalate calcium crystals. Repeated sputum examination negative for tubercle bacilli.

The evening of the day I examined him he vomited a lot of dark, foul-smelling blood. November 19, blood examination showed red blood cells, 1,960,000, hemoglobin 28 per cent., white blood cells 125,600. My first impression was that it was a medullary leukemia until it was shown that there were no myelocytes present. November 21, after a course of treatment with Fowler's solution, the white blood cells were reduced to 84,000. At this time the spleen was easily palpated below and underneath the costal margin and the stomach tympany pushed upward. At times his bowel movements were almost black. Ordinary microscopic examination showed unmistakable red blood cells.

November 28, white blood cells 32,000, hemoglobin 36 per cent. I tapped him posteriorly at the eighth interspace at the point of most intense dulness and drew 7 ounces bloody serum. On the same day he was vaccinated with Koch's O. T. after method of von Pirquet. No reaction resulted.

November 30 patient complained of marked pain in the left upper quadrant of the abdomen and in the left lumbar region. Left lumbar region was tender and dull on percussion.

December 5, blood count showed red blood cells, 2,300,000, white blood cells, 54,000; hemoglobin, 28 per cent. Differential count, polymorphonuclear, 80.8 per cent.; lymphocytes, 10 per cent.; large mononuclears, 6.8 per cent.; eosinophiles, 2.4 per cent.

December 7 I aspirated and withdrew 52 ounces bloody serum from the pleura. He developed a general edema, even to the bulbar conjunctiva.

December 18 patient had a severe chill, with prostration, but recovered in a short time, and the next day felt as well as formerly.

December 20 patient died suddenly, apparently of shock. During the whole course of his illness he had but little fever, it averaging, the first three weeks, 97 F. a. m. to 101 F. p. m., being very irregular, and the second three weeks 97 F. a. m. to 99 F. p. m.

Clinical Diganosis.—The diagnosis was not made before death. Tuberculosis of the lungs, while possible, was doubted, and if present of not enough moment to cause his symptoms. Malignancy or perinephritic abscess was suspected. The pleural effusion, because of the presence of blood, pointed either to an active tuberculosis of the pleura or malignancy. In view of the other symptoms it was thought the condition was probably malignant, possibly sarcoma.

Autopsy.—On opening the abdomen very little adipose tissue was present and there was a small amount of fluid in the peritoneal cavity. The liver extended downward about 3 inches below the costal margin; left lobe was adherent to the diaphragm and the stomach. The omentum was adherent to the organs of the left upper quadrant; spleen enlarged, extending below the costal margin about an inch and was adherent to the parietal peritoneum.

In separating the adhesions the spleen was ruptured posteriorly and found to be necrosed in its upper third. Behind it there was a large clot, its equal in size, and a large amount of necrosed tissue. On removal in the center of the necrosed area was found a growth the size of a large walnut which was harder than the surrounding tissue. On splitting, this growth was found to be a pinkish white and extended into the spleen tissue in finger-like shoots. Stomach and intestines were distended and a small growth found at the cardiac end of the stomach adjacent to the spleen. The pancreas was apparently normal. The under surface of the diaphragm adjacent to the spleen had the same growth. The left lung was absolutely collapsed. The left pleura over the diaphragm and the mediastinum was thickened, roughened and had several areas of congestion. There were a few recent cobweb adhesions from the lung to the pleura. The left pleural cavity was filled with serous fluid. The right lung showed marked anthracosis, some compensatory emphysema and thickening at the right apex, with some pleural adhesions at this point. Kidneys showed chronic parenchymatous nephritis.

From the extent and nature of the growth in the spleen, the smallness of the nodule in the stomach and the condition of it, and also from the history of the case and the course of the symptoms, it is to be presumed that the growth was primary in the spleen.

Histologic examination was made by Dr. W. T. Cummins, Philadelphia.

Anatomic Diagnosis.—Acute fibrinous pleuritis; emphysema and fibroid pneumonia; no tuberculosis; cloudy swelling of the liver; chronic parenchymatous nephritis; necrosis (post-mortem) of pancreas; carcinoma simplex of stomach and spleen.

The diagnosis being rather a rare condition, I will quote in detail part of Dr. Cummins' report, which is as follows:

Section through diaphragm and spleen: On that portion of the section which seems to be the pleural surface of the diaphragm there is a fibrinocellular exudate, beneath which and extending to the muscular tissue there is a round-cell infiltrate. The remainder of the section closely resembles the description of spleen as noted below.

Spleen: Capsule moderately thickened, with fibrous tissue. That part of the spleen lying immediately beneath this appears quite loose and alveolated in character. A few Malpighian corpuscles are to be seen. Another section shows the entire specimen to be alveolated. The normal splenic cells are seen in

* Read before the Luzerne County, Pa., Medical Society, June 8, 1910.

each section, but in addition many polynuclear neutrophils and eosinophils and cells with large round and elliptical vesicular nuclei resembling epithelial cells.

Stomach: Three sections all from cardia. These resemble each other rather closely, and in two of them the mucosa is well outlined and in places the basement membrane appears lost. Throughout the submucosa and muscularis the tissue is densely packed with cells of irregular character, all of which, however, have vesicular nuclei. There is almost no fibrous tissue and blood vessels are but few in number. In portions of the sections polynuclear neutrophils, eosinophils and plasma cells are present. These are seen prominently near the mucous surface. On account of the evident proliferation of the glandular epithelium, penetration of the basement membrane and the vesicular and epithelial character of the cells making up the major part of the tissue, a diagnosis of carcinoma is made.

THE RÔLE OF SURGERY IN PREVENTIVE MEDICINE*

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By the removal of infection atria surgery may do much to prevent disease. That adenoids and diseased tonsils and gums are the port of entry for many serious infections, among which may be mentioned tuberculosis,[2] typhoid, and diphtheria is well recognized, but it may be well to mention here the etiologic relationship these conditions seem to bear to more rare but yet important infections such as noma and acute poliomyelitis. The evidence is well-nigh conclusive that in the Scandinavian epidemic of poliomyelitis the contagion entered by way of the nasopharynx, and in a personal letter H. W. Hill, of the State Board of Health of Minnesota, says he strongly suspects that the same is true of the late epidemic in his state.

After considerable study of the subject and a limited personal experience I am convinced that the important practical fact concerning noma is that it is above all else an expression of a lowered vitality, consequent on antecedent disease. In Neuhof's[3] recent report of eight cases there is not to be found one primary case. Measles preceded the noma in all cases and both measles and ulcerative stomatitis in six cases. Perhaps in the majority of cases this antecedent disease is medical rather than surgical, but in not a few cases it is surgical, and timely, intelligent, surgical treatment might avert the catastrophe. I have in mind especially diseases of the mouth, teeth and nasopharynx.

Such deformities as club-foot, hernia, etc., prevent their possessors from living correct lives and thus lower resistance to disease. Not only does removal of these disabilities conduce to greater physical strength, but I am constrained to believe that the psychic improvement is quite as important. Compare, for instance, pictures of club-foot patients taken before and after cure, and you will, in the older patients, quite often see almost as much improvement in the facial expression as in the form of the feet. I can not but feel that this improvement in expression marks a change for the better in the patients's attitude toward life, which is a health asset of real value. If this change for the better is brought about by relief in the older patients, it is a fair presumption that the deterioration might be prevented by early operation.

Not only should local tuberculous lesions be cured in the interest of the patients themselves, but when these lesions are discharging, the interest of the community quite as forcibly demands that they be cured.

The only reason why patients with tuberculosis of the urinary tract or patients with anal fistulæ are not so great a menace to the public as are those with pulmonary tuberculosis is that the bacilli from the former are usually dropped into the closet. Too little attention is paid by surgeons generally to minimizing the dissemination of pus-producing bacteria by patients, especially those patients with comparatively trivial troubles, who are going about, and perhaps dressing their lesions themselves. Suppurating lesions should be treated with the welfare of the public in view as well as that of the patient. Ordinarily the surgeon is content if he treats his patient properly and does not himself carry the infection. Is it not his duty also, through proper instruction to these patients, to prevent them from spreading the infection? Does it require a great stretch of the imagination to suppose, for instance, that a child with a discharging ear is in a certain degree a menace to others, and especially to the mother who happens to be confined during her ministrations to the child?

Notwithstanding the activity of the otologists, deaths from brain abscess, meningitis and thrombophlebitis resulting from neglected middle-ear disease are all too common. Like laceration of the cervix, phimosis has been blamed as causing almost everything in the way of illness from pain to paresis, and it is quite probable that circumcision, like cervical repair work, was for a time overdone; but to-day the pendulum has swung too far in the other direction. From an experience by no means small I have come to regard phimosis as one of the most productive causes of hernia in children; as a frequent cause of cancer of the foreskin; and a frequent cause of serious nervous manifestations. Moreover, a tight foreskin is neither comfortable nor cleanly; and it not only makes its possessor an easy prey to venereal infection, but what is of greater importance, enhances his ability as a carrier of infection.

The importance of long continued irritation as an etiologic factor in cancer grows as our knowledge increases. Many cancers of the stomach might be prevented by early surgical intervention in gastric ulcer. Stone as a cause of cancer of the kidney has long been recognized. In the Mayo clinic two cases of stone associated with cancer of the kidney were met in a total of sixty cases. In an experience covering twenty cases, or less, I have met two cases.[4] In three cases of large polycystic kidney I found carcinoma twice. Both were in male patients over 40. In one there was also a pelvic stone, but in the other nothing but the polycystic condition with cancerous degeneration.

I have seen sarcoma engrafted on a fatty tumor of the elbow in an elderly woman. The tumor was situated on the flexor side of the joint where it was many times

* Read in the Section on Preventive Medicine and Public Health of the American Medical Association, at the Sixty-first Annual Session, held at St. Louis, June, 1910.

* Some introductory remarks concerning the Section are omitted from THE JOURNAL but appear in the Transactions.

2. According to Chiari (Berl. klin. Wchnschr., 1899, Nos. 45 and 47) adenoids are the primary seat of tuberculous infection in 5 per cent. of all cases. Recent observations of Murphy especially, seem to show that the majority of joint infections are due to bacteria which enter the blood via the nose or throat.

3. Am. Jour. Med. Sc., May, 1910, p. 705.

4. My second case of cancer with stone occurred after my paper on nephrolithiasis, read before the Section on Surgery at this Session, was written. Hence in that paper only one case is reported.

daily subjected to pressure. What surgeon of experience but has seen many cases of carcinoma or sarcoma commence in warts, moles, eczematous patches and fissures? It is my firm conviction that by timely surgery cancer could be prevented in a large percentage of cases. Most of the cases of cancer cured by surgery are those which are cured before they come, plus those which are cured before the diagnosis can be made save by the microscope; and herein lies the cause of cancer quacks' continued popularity: "Didn't he cure Belinda Brown of a cancer which commenced just like that one which killed Sarah Smith?" The point I wish to make is this: that by removing causes of irritation in the shape of gastric ulcers, lacerated cervices, phimoses, gall-stones, kidney-stones, warts, moles and other non-malignant tumors and causes of irritation, surgery can prevent more deaths from cancer than it can by the removal of cancerous conditions after such a diagnosis is possible. I venture to suggest here an addition to our cancer vocabulary, viz., potential cancer. Through a personal communication from Dr. H. K. Mouser[5] I learned that of the epileptics in the Indiana School for Feeble-Minded Youth 17.64 per cent. have a history of difficult labor, and that of all the inmates the percentage of difficult labor in 727 cases in which the birth history is given is 11.69. Practically all children who suffer from cerebral hemorrhage produced by birth injuries are permanently disabled, and 30 per cent. of those who recover develop epilepsy.[6] Ten per cent. of the cases of infantile convulsions and practically all cases of congenital palsy are due to abnormal labor.

What does "abnormal" and "difficult" labor mean in these instances? It means version, high forceps, and labor terminated by the unaided forces of Nature after an unconscionable lapse of time and expenditure of maternal energy. In these so-called abnormal labors the maternal mortality is 1.14 per cent., the maternal morbidity is 42 per cent.; over 20 per cent. of the children die,[7] and 10 per cent. of those that live are seriously injured as a result of birth injuries.[8] Couple these facts with those just given concerning fetal morbidity in this class of labors, and see if you do not agree with me in the assertion that timely, courageous and intelligent obstetric surgery can prevent much of this morbidity and mortality. Some experience and a careful study of the subject forces me to the conclusion that Cesarean section in competent hands could prevent much of this loss of life and usefulness.

In the preparation of a paper on Cesarean section for the Southern Surgical and Gynecological Association[5] I gathered through correspondence the opinions of a number of men of experience on this subject. Permit me to quote four, which fairly represent the concensus of opinion of the whole.

Newell of Boston says:

In the first place, the elective operation done before labor, in the absence of complicating disease, with the patient in good condition, is, in competent hands, a safe surgical procedure, and I believe the morbidity in these cases is very slight and certainly very much less than could be claimed for the ordinary obstetrical operation in the same class.

De Lee thinks that "Cesarean section ought to have a wider field and should replace many of the brutal forceps and version operations." Davis says:

Elective Cesarean section by competent operators, on uninjured and uninfected patients in good condition, gives at the present time the best chance of life and health to the mother and child in cases where mechanical disproportion or physiologic incompetence to endure labor are markedly present.

Hirst (who has done 80 Cesarean sections, with 5 deaths) says:

My recent experience convinces me that Cesarean sections may be done with impunity after hours of labor, if the woman is not infected and the technic of the operation is as good as it ought to be; the mortality even in infected cases need not necessarily be excessively high.

That prompt surgical treatment in birth injuries will prevent many deaths, and much invalidism, most of which is worse than death, no one who has studied the subject will deny.

As intimated in the beginning, this paper can be little more than suggestive, but if it is instrumental in arousing an interest in the subject commensurate with its importance, then my object has been accomplished.

West Wayne Street.

5. Internat. Jour. Surg., September, 1909, p. 269.
6. Progressive Med., March, 1907.
7. Progressive Med., March, 1908.
8. Porter, M. F.: Elective Cesarean Section, THE JOURNAL A. M. A., March 20, 1909, p. 937.

A CUTANEOUS ANAPHYLACTIC REACTION AS A CONTRA-INDICATION TO THE ADMINISTRATION OF ANTITOXIN *

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Almost every physician who frequently has occasion to administer antitoxic serum has seen more or less serious symptoms follow the injection in individuals who months or even years previously have received serum. These symptoms usually develop within twenty-four hours, often in less time, and may be slight, consisting of one or several of the following: erythema, urticaria, swelling of lymph-glands, joint pains, fever, or they may be very grave, consisting of the above in an exaggerated form with profound collapse, albuminuria and bloody stools.

It seems very desirable to be able to determine in advance those cases in which a second administration of serum will precipitate dangerous anaphylactic manifestations. In a recent paper Knox, Moss and Brown[1] described a local cutaneous anaphylactic reaction which indicates hypersensitiveness in rabbits to horse serum. Thinking that this test might give the desired information in the case of patients requiring a second injection of antitoxin after a lapse of sufficient time for the development of hypersensitiveness, I have applied it in thirty cases.

Before discussing the results, the test, which is extremely simple and easy to perform, may be described as follows: The skin of the non-hairy, inner side of the upper arm is cleansed with alcohol, dried with a sterile sponge and 0.01 c.c. normal horse-serum, preserved with a few drops of chloroform, is injected intradermally. A fine needle and a hypodermic syringe divided into hundredths of a cubic centimeter is convenient for this purpose, and undiluted serum should be used. A positive reaction consists usually of an area of inflammation

* From the Research Laboratory, Phipps Dispensary, Johns Hopkins Hospital.

1. Knox, J. H. M., Moss, W. L., and Brown, G. L.: Subcutaneous Reaction of Rabbits to Horse Serum, Jour. Exper. Med., 1910, xii, 562.

1 to 2 cm. in diameter, which comes on within twenty-four hours and disappears in two or three days. It sometimes happens that the entire reaction is over in twenty-four hours, so that an observation should be made at the end of about ten hours after the injection. The reaction is purely local at the site of injection and in no case have any constitutional symptoms or discomfort resulted. With a negative reaction nothing is to be observed except perhaps the needle-prick, and if care be taken to introduce the needle sufficiently superficially even this may not be found.

Of the thirty individuals tested nine had never received any form of antitoxin and all nine gave a negative reaction. The remaining twenty-one individuals had received antitoxin from four months to ten years previously. Ten of these gave positive reactions and eleven negative. The result does not seem to depend on the length of time which has elapsed since the injection of antitoxin, as the positive and negative reactions were about equally distributed as regards the time interval since injection. It is hardly to be expected that all ten of the patients giving a positive skin reaction would develop serious anaphylactic symptoms should they receive another therapeutic or prophylactic dose of antitoxin, but of the ten positive reactions especial attention must be called to three which differed markedly from the remainder. These set in with explosive suddenness, one at the end of about six hours, another after about eight hours and the third after about twenty-four hours. Immediately surrounding the site of injection there suddenly appeared an urticarial wheal about 1.5 cm. in diameter and surrounding this an areola of inflammation about 5 to 6 cm. in diameter. The appearance of the reaction was accompanied by marked itching, but no other manifestation. These three reactions subsided as the others did, except, perhaps, in less time. It would seem that reactions of the nature just described might indicate danger from any further injection of antitoxic serum.

The value of this test can be determined only by injecting therapeutic or prophylactic doses of antitoxin in individuals who give a positive skin reaction. Since the value is undetermined, patients who give a positive skin reaction must present themselves in whom the indication for the administration of antitoxin is sufficiently urgent to overbalance any possible fears we may have of serious anaphylactic manifestations resulting.

I have presented this reaction before having tested it out fully, because of the length of time which would be required to do it in this hospital, owing to the fact that at present we have no ward for contagious diseases such as diphtheria. I would suggest that wherever a delay of twenty-four hours is permissible before the injection of antitoxin, this test be performed; if the patient gives the ordinary positive reaction and the indication for antitoxin is very slight it might be safer to withhold the antitoxin, but if the indication is fairly strong the patient should receive the injection. In the presence of a positive reaction, such as described in the three cases above, I should hesitate to give antitoxin except on very urgent indications; however, the value of the test must be finally determined by just such cases, and it is to be hoped that any who carry out the test will report the results in order that we may determine if the reaction gives us a means of knowing in advance those cases in which second injections of antitoxin are contraindicated and thereby prevent the lamentable accidents which sometimes now occur.

In conclusion I would say that, so far as I am aware, no such test as I have proposed has been recorded, although I make no claims to having gone through the enormous literature which has appeared in the last few years on the subject of anaphylaxis.

LARGE ACCIDENTAL VULVAR HEMATOMA AT TERM

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Accident.—On July 4, Mrs. A. R., aged 39, quintipara, pregnant at term, while milking, was knocked down by a cow, and struck the vulva on a corner of a box. Immediately a vulvar tumor appeared, with lancinating pain, faintness and shock; the swelling increased until she was carried to the house and placed prone. Patient was seen in half an hour; pulse was 110, respiration 30, temperature 98.

Examination.—There was found a tense globular tumor at vulva, as large as the head of a 9-pound child, elastic in consistency, purple in color, painful to the touch, and located in the right labium major. The vulvar orifice was displaced to the left, barely admitting a finger, which outlined the tumor for 3½ inches, along the bulging right vaginal wall. No varices were apparent.

Treatment.—Under chloroform anesthesia, administered by Dr. George S. Tweedie, and with aseptic precautions, the tumor was incised, for one inch and a half, at the junction of the labial skin and vaginal membrane, where rupture appeared imminent, and over two pints of clotted blood were evacuated by the finger, with free continued hemorrhage. The cavity was irrigated and packed with sterile gauze, and a snug pudendal pad applied. The usual restorative measures were employed. The packing was partially removed next day with irrigation. On the day following, at 9:30 a. m., the remainder was removed and the cavity irrigated and dressed.

Labor.—At 2 p. m., July 6, labor commenced and a robust male child was born at 2.20. On my arrival at 2:30, examination showed that an irregular portion of right vaginal wall, about 2 inches by 1 inch, had been torn off by the descent of the head. Placenta was expelled by Credé's method. Free hemorrhage was controlled by ergot, fundal kneading, and hot irrigation.

The puerperium was normal, without a rise of temperature. The vaginal tear was irrigated and dressed daily.

This case is considered worthy of reporting for these reasons: a large, accidental, labial hematoma near term, not inducing labor, which came on naturally, yet precipitately, two days later; the partial destruction of the right vaginal wall by the descent of the head; the normal convalescence under adverse conditions.

Treatment of Angina Pectoris.—F. G. Thomson, in the *Medical Press and Circular*, states that the treatment of an actual attack of angina pectoris demands three considerations: (1) Rest, to promote restoration of heart power; (2) vasodilators, to diminish cardiac strain; and (3) morphin, to relieve the pain when this is not achieved by rest and amyl nitrite or nitroglycerin. In cases of severe spasmodic pain in middle-aged people, amyl nitrite, by lowering arterial tension, may provide instant relief; but in those cases of advanced fibroid degeneration in old people in which severe, prolonged, frequently-occurring attacks of cardiac pain render life a burden, the only drug which seems to give relief is morphin, or failing that, the administration of chloroform. In either case the relief is only temporary, and the repeated administration of one or other of these drugs may be necessary to render bearable the closing stages of a distressing and painful condition.

Therapeutics

INTESTINAL INDIGESTION

Whether there is more or less continued diarrhea or whether diarrhea is intermittent, or whether there is intestinal putrefaction, especially colon putrefaction, or simply intestinal fermentation with a large production of intestinal gas, in any of these conditions, radical changes in diet have long been found of value. As such a condition cannot long persist without causing various disturbances, such as coated tongue, bad taste in the mouth, bad breath, headache, sleepiness in the daytime and restless sleep at night, abnormal perspiration, often irritation of the kidney and even of the bladder, intestinal indigestion should be radically treated in its incipiency.

It has long been shown that certain bacteria are normal in the intestine, and certain bacteria normally there cause more or less serious symptoms of toxemia if they become enormously multiplied, or under favorable conditions in the intestines for their growth, produce sufficient toxins to cause the symptoms just enumerated. Also, there may develop in the intestines bacteria which are absolutely foreign to the intestines, i. e., which are distinctly pathologic. It has also been shown that certain bacteria thrive best on protein digestive products, or rather on products of protein indigestion, and if this pabulum is removed the germs die a natural death. This same is true of certain germs that grow best in the carbohydrate by-products or digestive products, and, here again, if this pabulum is changed the germs die. The cause of putrefaction in the intestines in adults is more likely to be the results of protein decomposition. This knowledge is not frequently enough utilized in the treatment of these intestinal indigestions.

Lately C. A. Herter (*Internationale Beitrage zur Path. und Therap. der Ernährunge-Störungen*, 1910, I, No. 3, p. 275) has carefully noted the results of rapid changes in the diets of men, monkeys and cats, and finds that changes from a dominant protein diet to one in which carbohydrates preponderate were followed by definite and consistent changes in physiologic conditions in three distinct directions, viz.: a, in the nature of the intestinal bacterial flora; b, in the putrefactive products of the feces and the urine; c, in the clinical conditions.

A. Nature of Intestinal Bacterial Flora.—The chief characteristic of the dominantly protein diet is the development of a strongly prophylactic type of bacterial organisms. The mixed fecal flora in such a diet contains a high proportion of bacteria capable of proteolyzing casein actively, and of liquefying gelatin. A large proportion of the organisms may be classed in the *B. subtilis* group. In the experiments on men and cats *B. aerogenes capsulatus* also appeared. The organisms on the protein diet also possessed the power of forming an abundance of gas in dextrose bouillon. After fermentation for twenty-four hours, the gas in the fermentation tube amounted to from 60 to 90 per cent.

On changing from the protein to the carbohydrate diet, the flora undergoes a rapid change with substitution of an acidaphilic, feebly proteolyzing type. Cultural investigations have shown that these organisms are allied to those characteristic of normal nurslings. The mixed fecal flora from the carbohydrate diet produces very little gas in sugar bouillon fermentation tubes

B. Putrefactive Products of the Feces and the Urine.—A well marked feature of the protein diet is the occurrence of neutral or alkaline stools containing products of putrefaction, such as indol, skatol, phenol, aromatic oxyacids, indolacetic acid and hydrogen sulphid. On the carbohydrate diet all of these substances are greatly reduced in amount, or are entirely absent, wholly in accord with these results is the fact that the indican and the aromatic oxyacids of the urine are markedly diminished during the carbohydrate diet, and may become undetectable.

C. Clinical Conditions.—The clinical conditions were most significant in experiments on monkeys, where Herter was able to feed exclusively on hard boiled eggs for considerable periods of time. In these animals, as the proteolytic bacteria became dominant in the alimentary canal, a state of drowsiness developed. The animal remained on its perch, holding its head in its hands. It grew stupid, responded poorly to outside stimuli, and in general showed but little interest in its surroundings. As carbohydrate was added to the diet, both the psychical and physical attitude of the animal underwent a marked change. The posture became erect and the usual brightness and alertness returned. Herter believes the symptoms observed on the protein diet were signs of intoxication brought about through the excessive use of protein.

The bacterial changes in the intestine, the products of putrefaction and the clinical conditions may thus be varied at will by changing the amounts of protein and carbohydrate in the diet. It seems probable that in conditions of disease of the intestinal tract where certain undesirable bacteria abound that frequent alterations in the chemical nature of the diet may become beneficial by interfering with the establishment of any one type of bacteria in the intestine. This view harmonizes with the clinical results often obtained from variations in the diet in infancy and in adult life.

INTESTINAL INDIGESTION IN CHILDREN

Drs. John L. Morse and Fritz E. Talbot (*American Journal of the Medical Sciences*, June, 1910) have made a study of the stools of children who have had intestinal indigestion or who did not get the value of the food which they ingested. They have studied the proposition from the standpoint of actual nutrition values of the various foods and what the child needs in calories, and they find that an ordinary child four years of age needs 1,200 calories; eight years old, 1,400 calories; and twelve years old 1,600 every twenty-four hours. They believe that a child four years old needs 55 grams of protein; a child eight years old, 60 grams, and a child twelve years old, 75 grams every twenty-four hours; 5 grams may be added to the above average for boys and perhaps 5 grams deducted from the above average for girls. These are the average protein needs, and not the minimum protein need, which is roughly about two-thirds of the average amount.

These investigators find that fats may be entirely replaced by carbohydrates for a considerable period without doing harm, but there is a certain amount of risk in replacing carbohydrates entirely by fats because of the danger of causing acid intoxication or acidosis. They present a very graphic table of food values, to which the reader is referred. Suffice it to state here that a quart of ordinary milk represents 670 calories; a tablespoonful of cooked oatmeal and most other cereals, 25 calories; a tablespoonful of cooked rice, 45 calories; a potato the

size of a large egg, 100 calories; an ounce of meat, 60 calories; an ounce of beef juice, 10 calories; an ounce of butter, 225 calories; a full teaspoon of cane sugar, 25 calories; a slice of bread, 75 calories, etc.

A normal child's stool should be "homogeneous in consistency; a lumpy or mushy condition is pathologic." When lumps are present in the stools there is an excess of milk, meat or eggs in the diet, or the reverse, the child is under-fed. The child may have these lumpy stools when he is apparently getting enough in bulk to eat with a large indigestible residue but really not enough of actual nutriment. Improper chewing of food may give indigestible masses. A normal child's stool reacts to litmus paper weakly alkaline, weakly amphoteric (weakly alkaline and weakly acid), or neutral. "A very strong alkaline reaction, especially if accompanied by a putrefactive odor, suggests protein putrefaction. A strong acid reaction associated with a rancid odor suggests disturbances in the digestion of fat; if associated with the odor of lactic or acetic acid, suggests disturbance in the digestion of carbohydrates. In the latter case there is likely to be bubbles or a frothy condition."

For classification Morse and Talbot suggest dividing the stools into fatty stools, carbohydrate stools and catarrhal stools. "The fatty stools are greenish or white in color, dry or of clay-like or creamy consistency, acid in reaction, and of a rancid odor. The carbohydrate stools are brown or golden yellow in color, salve-like in consistency, acid in reaction, and acid or sour in odor. The catarrhal stools show a basis of mucus and often have a foul odor indicating protein putrefaction." The authors describe the microscopic appearance and chemical staining of the stools, but it is not the object of this abstract to discuss this detail, but to present a ready method of ascertaining, approximately at least, the character of the child's digestion. Test meals or test daily diets are not essential. It is essential, however, to know what food the child has eaten for twenty-four, or better, forty-eight hours, preceding the macroscopic and reaction study of the stool.

Morse and Talbot found in their investigations that many times the difficulties in digestion were due more to an excess in the quantity of food than in errors in quality. Brief abstracts of two of the cases that they present are of therapeutic value.

A boy 4½ years old had five or six loose movements of the bowels a day and was losing weight. Investigation showed that he was over-fed, that the caloric value of his food was nearly twice what was needed. This was corrected, the caloric value of his food being reduced to what was the normal average, and the movements immediately dropped to two a day and the child began to increase in weight.

A boy 2 years of age had been losing color and weight for about three months, and an estimtae of the food taken showed he was getting 1,200 calories per day, where approximately his needs were for only 1,000 per day. At a given date his diet for twenty-four hours consisted of 34 ounces of milk, 4 tablespoonfuls of cereal, 2 tablespoonfuls of beef juice, 3 slices of bread and a baked potato. This gave him about 1,150 calories furnished by 40 grams of fat, 130 grams of carbohydrates and 50 grams of protein. Examination of his stools, two a day, showed them to be yellow, semisolid, of foul odor, of alkaline reaction and to contain a small amount of mucus. The microscope showed that starch was not well digested, while fat was. The starch part of the food was then cut down and meat added to his diet, and one week after the above diet it was changed to 33 ounces of milk, 2 tablespoonfuls of cereal, 2 slices of bread, a baked potato and 2 small slices of chicken. This represented about 1,050 calories furnished by about 40 grams of fat, 105 grams of carbohydrates and 50 grams of protein. His movements then became brown, soft, of uniform consistency, alkaline in reaction and contained but a small amount of mucus. The microscope showed a slight excess of neutral fat and fatty acids but no excess of meat fibers, and there was no undigested starch. The amount of milk was then cut down and the starch slightly increased, and from this time on the child has continued a steady improvement in every way.

Several instances are cited where too much fat and too much milk were given to children. Examination of the stools, with the child's diet being known, suggested proper correction. Improvement followed as proof of the needed change in diet.

The object of this article is to urge that a little more time be given by the physician in inquiring into the exact diet of a child with intestinal indigestion, or a child that is losing weight; that he personally examine one or two of the stools; that he have on hand, readily accessible, a table of the protein and caloric value of foods and a table of estimation of the average needs of a child of various ages; that he more carefully suggest or arrange the diet that is probably correct for the child, and then, week by week, modify that diet to the child's individuality. If this amount of care is taken less medicine, less tonics, less astringents, less bismuth, less lime and less change of climate will be needed to rescue the young child from more serious conditions than that we are discussing.

CHRONIC COLITIS

Any treatment that has proved of value in chronic inflammation of the large intestines should be noted. Ludwig von Aldor (*Therapeutische Monatshefte*, 1910, xxiv, No. 4, p. 171), after several years of investigation, has come to the conclusion that flesh food should be largely or entirely removed from the diet during chronic colitis. He also has found benefit from the local application of hot gelatin solutions. For this purpose the patient receives a rinsing enema of a pint of water at a temperature of 77 to 83 F. (25 to 28 C.) one hour before the gelatin injection. He is then made to rest in bed for at least half an hour. From 40 to 80 c.c. (1⅓-2⅔ fluid ounces) of a 10 per cent. gelatin at a temperature of 113 to 125 F. (45 to 52 C.) are then injected, with the patient lying in bed on his left side. The abdomen is covered with a hot compress and the patient is kept perfectly quiet for two hours. In many cases the gelatin is completely retained by this procedure. Von Aldor puts much emphasis on the high temperature of the gelatin solution. A temperature of 113 to 122 F. (45 to 50 C.) is very easily borne by the large intestine.

Usually the patient passes a well-formed stool several hours after the injection. The injections are given every day until complete recovery occurs, which is in from three to fourteen days. This treatment is absolutely harmless and has proved effective in all cases in which the author has tried it. He believes that the therapeutic value is due:

1. To the high temperature.
2. To the use of non-fermenting substance for injection.
3. To the absorption and mechanical removal of the bacteria and intestinal excretions by the gelatin.

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[For other information see second page following reading matter

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WATER FILTRATION AND TYPHOID FEVER

The significance of the continued high rate of typhoid fever in Washington, D. C., after the installation of a supposedly model filtration plant, is again brought up for discussion, this time by H. W. Hill.[1] The facts of the situation are sufficiently remarkable to bear repetition. Here was a well-sewered city with a relatively high typhoid rate; the apparently excessive prevalence of the disease extended over many years and was attributed by those who studied the situation to a contaminated drinking-water. No dissenting voice was raised against this conclusion. In the instructive controversy over the relative merits of slow sand filters and mechanical filters which preceded the construction of the Washington filter-bed no one seems to have questioned that the supply of water from the Potomac river was highly polluted. The numerous committee reports and discussions of ten years ago abound in statements like the following: "Filtration of the Potomac water on a large scale is imperatively called for in order to diminish the excessive typhoid fever death-rate in the national capital." As the outcome of years of persistent agitation the construction of a filter-bed on the principle of slow sand filtration was finally authorized, and since October, 1905, the City of Washington has had an uninterrupted supply of filtered water.

Now, the surprising sequel is that the presumptive improvement in the character of the Washington water-supply due to the construction of the filter did not lead at once to a noteworthy reduction of the typhoid death-rate. Contrary to the experience of Lawrence, Albany and other American cities which have installed slow sand filters, the typhoid rate in Washington showed no immediate decline, but was even somewhat higher the year following the use of the filter than in the three years immediately preceding! This unexpected outcome sowed seeds of dissension in the councils of sanitarians. Some were at once for throwing over slow sand filtration as a method of water purification; others maintained that water could never have been an important factor in the causation of typhoid fever in Washington, and still others attributed the continued prevalence of the disease to defective operation of the filters.

It is fortunate indeed that the study of the situation thus outlined has fallen into competent hands. Under the auspices of the Public Health and Marine-Hospital Service three reports on typhoid fever for the years 1906, 1907 and 1908 have been issued, and a fourth report for 1909 is in preparation. These reports are models of careful observation and accurate gathering of statistics, but they have not given satisfaction to some sanitarians because they did not arrive at "definite conclusions." Others, while not objecting to the indefiniteness of these reports, have criticized their hints at mysterious causes and unknown factors. Others again, among whom Hill is one, frankly disagree with the conclusion of these reports that the filtered water-supply of Washington has played a relatively minor part, if any, in the causation of typhoid fever.

This well-known sanitarian, in the article just cited, avows his belief that "the vast majority of the native primary cases of typhoid fever in Washington otherwise unaccounted for are due to infection conveyed to them by the Washington water." It may be so. Every one knows how difficult it is to prove the negative of such a proposition. At the same time, if analogy and experience count for anything, the evidence, in order to be conclusive, not only must demonstrate the continued possibility of infection from the improved water-supply, but must practically exclude the possibility of infection through other channels. On the one hand, as we have mentioned before,[2] there is a possibility that carriers, infected by a previous polluted water-supply, may hand on the infection after the water has been purified and made safe. On the other, no one has yet brought forward any evidence to show that the Washington filters are more poorly constructed or more carelessly operated than the similar filters in Lawrence, Albany, Hamburg or London. It will be hard to convince sanitary authorities generally that a filtered water, in which only one out of seventy 10 c.c. samples contained the colon bacillus, is not a fairly safe water as filtered waters go. Evidence rather than assertion is needed. Hill suggests that a few months' sterilization of the water with hypochlorites would eliminate all doubt concerning water infection. Some such procedure as this would seem well worth while, since competent judges of the situation are so completely at variance.

Whatever be the explanation of the Washington situation, there is no need for discouragement on the part of the advocates of filtration. The reports coming in every day from various other cities that have adopted this method of water purification are uniformly favorable. Typhoid mortality in Philadelphia has fallen from 74.8 in 1906 to 21.2 in 1909, the mortality in the latter year being the lowest in the history of the city. Within three

1. Hill, H. W.: Am. Jour. Pub. Hyg., 1910, vi, p. 430.

2. The Importance of the Typhoid Carrier, THE JOURNAL A. M. A., Aug. 13, 1910, p. 609.

months Philadelphia has seen two entire weeks pass without a single death from typhoid fever. Columbus, Ohio, reports only 209 cases of typhoid and 20 deaths the first year of the filtration plant (1909), as against 1,565 cases and 170 deaths in the year preceding. The use of a settling basin in Richmond, Va., has been followed by a reduction in typhoid mortality, there being only fifteen cases reported in July of this year, as contrasted with eighty-eight in July, 1909. There is still ground for believing that storage and filtration are effective agencies of water purification.

PHARMACOLOGY AND THE CLINIC

Now that clinicians are using drugs more and more on the basis of experimental observation, both clinical and laboratory, it is of interest to read what Professor O. Loewi has to say on the subject in his inaugural address as professor of experimental pharmacology at Graz.[1] Loewi is a pharmacologist of the Schmiedeberg school, which has to its credit on the one hand the clearing up of the tremendous amount of rubbish which had accumulated in the Pharmacopeia, and on the other hand a wise moderation in refusing to follow blindly the bold flights of modern immunology. As he points out, it is in the study of fundamental cell problems, such as the physical properties of the colloids and the chemistry of the cell, by the methods peculiar to itself, that the future of pharmacology as a fundamental science must depend. The subject cannot be of real practical use until it has first established itself on such a basis.

To mention a few brief examples which Loewi uses to illustrate how cooperation between pharmacologist and clinician can lead to practical results: The fact that clinicians sometimes fail to obtain at the bedside results which laboratory observations might lead them to expect has been attributed to the difference in the behavior of drugs in the normal and diseased organism. Both pathology and pharmacology teach that in many instances this difference in reaction of a given organism, when not associated with actual destructive changes, is a mere matter of variation in irritability. The problem of treatment then becomes a matter of dosage. In case of intestinal colic, in which the clinician was inclined to condemn the use of the usual one-milligram (1/60 gr.) dose of atropin on account of the development of toxic symptoms, the dose was reduced to the unusually small amount of one-twentieth of a milligram (1/1200 gr.). Not only were the toxic symptoms eliminated but the desired therapeutic result was obtained. Just as in lead-poisoning the presence of the lead renders the intestine so much more irritable that a dose of atropin, which would have very little demonstrable effect on the normal intestine, can relieve the symptoms, so here, by a pathologic condition the intestine had been rendered so irritable as to react to a minute dose.

1. Loewi, O.: Wien. klin. Wchnschr., 1910, xxiii, 274.

The opposite condition, or decreased irritability, also sometimes has to be met. To treat this condition by an increase in dosage is not always wise, unless the clinician has a very definite knowledge of the complications to be expected, a point about which the pharmacologist should be able to give him information. Another means of meeting the difficulty of lack of irritability has lately been receiving more nearly the attention that its importance deserves, namely, the combination of two drugs. To illustrate: The loss of tone of the musculature of the intestine after surgical operations often fails to be relieved by pilocarpin. By the use of physostigmin, which increases the irritability, in combination with pilocarpin, which then stimulates, the desired result can often be obtained.

The treatment of a condition by the careful physiologic analysis of the functional disturbances involved, combined with the application of the drug based on a knowledge of its action, is shown in the following: A case of angina pectoris vasomotoria: heart symptoms, pressure in the chest, a feeling of intense fear appearing on exposure to cold. The physiologic analysis makes the following chain of events likely: Cold causes peripheral vasoconstriction; this leads to increased blood-pressure which exerts a stimulus on the depressor nerve, which in turn stimulates the vagus center and thus leads to the heart symptoms. The whole or part of this chain is probably in a condition of increased irritability, as normally such a result would not be observed. Instead of decreasing the irritability of the factor involved, however, it is necessary only to interrupt the chain by the administration of atropin, which paralyzes the vagus endings in the heart. The patient can now dip his hands into ice-water without any feeling of distress, which, however, comes on again when the effect of the atropin wears off.

The close affiliation of the clinician and the pharmacologist here outlined, besides being of practical use to the former, must of necessity be a great stimulus to the latter, provided he does not permit the urgency of the immediate solution of clinical problems on the basis of insufficient knowledge to influence unduly the direction of his investigations.

FERRO-SILICON POISONING

Improved manufacturing methods involving chemical processes, while they are intended to cheapen output or improve quality, often have effects inimical to health or may even menace life. This fact is illustrated in the case of ferro-silicon. The sudden deaths that have occurred among the crews of vessels laden with this product and illness among workmen in steel works from its fumes have led to an official investigation[1] of the cause. McWilliam[2] recently has given an account of accidents of this character occurring on vessels, and

1. Supp. to An. Rep. Local Government Board (British), 1909.
2. McWilliam, A.: Nature, July 14, 1910.

Hake[3] has made a careful study of the chemistry of the process of manufacture with a view to determining the exact causation of the lethal effects.

The earliest recorded accident from this source was in 1904, when a drum of this substance exploded while being unloaded from a vessel. Following this warning was given as to the handling and storing of the product. A little later, however, on the steamer Vaderland, fifty steerage passengers over a hold containing this material were made ill and eleven of them died. A number of other similar instances followed. In one instance all the immigrant passengers of the steamer Ashton, five in number, died on a voyage of only twenty-four hours' duration. This gave rise to a scare of cholera, but bacteriologic examination showed the cause to be the ferro-silicon in the hold. Some of these events were reported and discussed in THE JOURNAL by our London correspondent[4] a few years ago.

Ferro-silicon consists essentially of a mixture of compounds of iron and silicon, and the product averaging thirty per cent. of silicon has long been used in steel and iron works to remove gas bubbles from the molten mass, thus rendering it more compact. Within the last few years much richer ferro-silicons have been employed in making special steel products. The higher grade is made by heating in an electric furnace to a temperature of 2,000 C. a mixture of iron, sand or quartz and coke or coal. In the process calcium phosphate, which is harmless in itself, and arsenic, present as impurities in the coal or quartz, are reduced in the electric furnace in the presence of carbon to calcium phosphid and calcium arsenid, and remain in the ferro-silicon.

In the presence of water or moist air, as on vessels, or in the process of the manufacture of steel, these substances are decomposed with the production of phosphoretted and arseniureted hydrogen, two gases which are deadly poisons. Recent experiments have proved that phosphoretted hydrogen, when present in the air in the proportion of 0.25 per cent., is fatal to animals, and arseniureted hydrogen is equally toxic, although found in much smaller quantity in the ferro-silicon. Both produce by their inhalation severe abdominal pains, nausea, vomiting, great weakness, prostration, gradual loss of consciousness and death frequently within twenty-four hours. It is found that low-grade ferro-silicon containing not more than thirty per cent. of silicon may be safely stored and handled, but that the high-grade product containing between thirty-five and sixty per cent. of silicon is more liable than even the still higher grades to spontaneous disintegration with the production of the poisonous gases. To avoid this danger, it should be stored in freely ventilated places at a distance from offices and work rooms, and when transported on vessels it should be placed in open spaces.

3. Lancet, London, July 23, 1910, p. 220.
4. And, by a coincidence, he takes the subject up again in his letter printed in this issue of THE JOURNAL.

A MODERN ABERNETHY

While the passing away of a rugged personality, distinguished by sterling worth, is always a matter of regretful interest, it is doubly so when the vanished personality seems to represent a past or passing age. Such interest attaches to the death, in his ninety-fifth year, of Dr. John Burns of Glasgow. A tailor in his youth, he became a schoolmaster, and finally entered the medical profession, which he followed until within two years of his death. A shrewd and energetic practitioner and an able therapist, with the robust faith in remedies of the old school, he attained an extensive practice and great success, due mainly to that most important quality in the general practitioner—strong individuality. Many stories are told of him. While busily engaged in his consulting rooms which were frequented by great crowds he was, like the famous Abernethy, impatient of garrulousness. One day a woman entered his office and without saying a word removed a cloth from a scalded hand and held it out to the doctor. He examined it, cleaned it, snipped the blisters, and dressed it without a word being spoken on either side. As he was fixing the end of the bandage with a needle and thread (he always secured his bandages in this way, never with a pin), she said: "How much, sir?" "Nothing," he replied. "You are the most sensible woman I ever met. Come back to-morrow at the same time."

Dr. Burns was also impatient of hypochondriacs. One of this tribe waylaid him in the street and began to enter into details of his latest ailment. The doctor said sharply, "Put out your tongue, James, and shut your eyes." James did as he was told and the doctor slipped away, leaving the patient standing in the street, where he remained for a considerable time.

Long before Metchnikoff discovered the value of lactic acid bacilli, Dr. Burns recommended sour milk. One day he ordered some for a woman whose visage betokened chronic discontent. She said, peevishly, "Where can I get sour milk?" The doctor looked at her severely and said: "You will have no difficulty, ma'am; if you put some sweet milk in a bowl and look earnestly at it for ten minutes, it will be as sour as your face."

In the treatment of real illness, however, Dr. Burns never spared himself; his patient's welfare was his first consideration. Visiting a patient one day, he was met at the door by a priest, who said, "I have administered the last rites to your patient and she must not be disturbed." Dr. Burns pushed the priest aside, but the latter showed fight, and without further words the doctor forced the cleric down-stairs. Dr. Burns was charged with assault and had to pay a fine of five dollars. He told the magistrate that he would gladly pay the same fine again under similar circumstances, for his patient had surmounted the crisis of her illness and recovered.

Men like Dr. Burns, whose superficial idiosyncrasies serve but to bring out in stronger relief their substantial qualities, seem to be growing fewer—and per-

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haps they never were as numerous as we think. In any case, it is well for us occasionally to take time to hold up for honor and emulate the fearless honesty and the devoted unselfishness which distinguished the most worthy representatives of the old school.

Current Comment

COMMON SENSE TREATMENT OF DISTURBANCES OF THE BOWELS

In the Therapeutic Department of this issue is brought out an important matter: the necessity of regulation of the diet to correct disturbances of the bowels. It would be absurd to suggest that physicians are not mindful of this necessity, but it is certainly true that quite often not so much study of individual cases is made as the condition deserves. It is well to remember that a little change in diet may be far more effective than the small doses which it is possible to give of antiseptics, digestants, or correctives. This point was emphasized last week in the Pharmacology Department, in the comment on the futility of giving minute amounts of digestants. It should ever be kept in mind that food may be either a most potent agency for repair or a tremendous handicap.

WHITE PHOSPHORUS IN MATCHES

The United States is practically the only important civilized country which has taken no steps to prevent the use of white phosphorus in the manufacture of matches. That phosphorus poisoning occurs in this industry in the most serious form has long been known; but the fact is again confirmed by a recent investigation of American match factories by the Bureau of Commerce and Labor. THE JOURNAL news correspondence from European cities has frequently called attention to the fact that Europe has long been taking steps to safeguard workmen; there the use of white phosphorus is being restricted so that eventually it will not be used. This country would have been the first to take action on this matter had it involved a commercial proposition; but, since it is a matter that merely affects the health of the workers, it is different.

HEALTH OF WHITE MEN IN THE CANAL ZONE

The construction of the Panama canal is a problem in sanitation first and an engineering problem only secondarily. This THE JOURNAL has repeatedly asserted, as also that the sanitary difficulties have been met in a remarkably successful manner. The engineering work seems to be progressing toward an equally happy conclusion. The success of the canal itself seems, therefore, assured. But there is another fact connected with the building of the canal which is worth calling attention to. Colonel Gorgas in his address before the American Society of Tropical Medicine[1] expressed it as his conviction that the greatest good the canal had done is that it has given another demonstration of the fact that the white man can live and do the same work in the tropics as he can in the temperate zone. It is shown that health conditions in the Canal Zone among the unacclimated men, women and children from the United States are as good as in any healthy part of the United States; also that the sanitary surroundings of the native and the negro have been so changed that they enjoy the same degree of health as the ordinary inhabitant of the United States. Colonel Gorgas also believes that the criticism that the expense of sanitation in the Isthmus has been excessive is unwarranted. He points out that the work of the Sanitary Department of the Isthmus has been much broader than the ordinary work of a health department, and that it performs the same functions as the whole city government of New York City with the exception of the accounting system, the judiciary and the police. As a matter of fact the medical and hospital care of the employees and their families has cost two and one-half cents per diem per capita, and their sanitation nine mills per day, which he believes to be well within the financial ability of any tropical community. Aside from the great object-lesson presented by the sanitation of the Canal Zone, Colonel Gorgas calls attention to the fact that history shows that great local populations and great wealth have grown up where routes of commerce converge between great divisions of the world. In the case of Panama more routes of travel converge, a greater area of territory is affected, and the concentration of routes is brought into narrower limits than has ever occurred before. He expects in the course of years to see a large and wealthy population grow up in the neighborhood of the canal.

1. Gorgas, W. C.: The Expenses Necessary for Sanitation in the Tropics, Gulf States Jour. Med. and Surg., July, 1910.

VEGETABLE ACTINOMYCOSIS

Under the title *Die pflanzlichen Actinomycosen*, Peklo[1] has published the results of a comprehensive study of the organisms found in the root tubercles of the alder and sweet gale (*Myrica gale*). As indicated by the heading given to his communication, he has arrived at the conclusion that these micro-organisms are to be considered as belonging to the group actinomyces. "Clubs" and other characteristic actinomycotic growths were found to be produced by the "bacteroids" under appropriate cultural conditions; and certain chemical substances such as phosphates and potassium and calcium salts appear to favor especially the growth of the root tubercle organisms. Peklo has utilized his observations on the physiology and morphology of these forms as a basis for a fresh study of the human tubercle bacillus. By the use of analogous culture media he succeeded in producing in cultures of the tubercle bacillus structures showing a remarkable morphologic similarity to the growths from the alder nodules. In fact he concludes definitely that the tubercle bacillus is an actinomyces. Interesting and perhaps fundamental analogies in the chemical relations and pathologic activities of these organisms are pointed out. Such observations are well worth attention, although they are perhaps more suggestive than conclusive.

1. Centralbl. f. Bakteriol., II, 27, 1910, pp. 451-579.

PRESS CENSORSHIP IN AMERICA

Under this heading, the *Christian Advocate* of New York comments on the way in which the brewing interests keep watch of the attitude taken by newspapers and other periodicals. This relationship is so similar to that existing between the patent and proprietary medicine business and lay and medical periodicals, that its comments are easily made to apply to the latter by changing a few of the words. After remarking that a part of the financial embarrassment of the Boston *Herald* is due to the withdrawal of brewers' advertising, because that paper vigorously supported a bill which was antagonistic to the saloon interests and, further, that the Chicago *Tribune* recently lost a large amount of beer advertisements because an editorial on hot weather hygiene recommended abstinence from beer, the *Christian Advocate* continues: "It is loudly denied that there is any concerted action among the brewers ['patent medicine' manufacturers] to control the utterances of the press by dispensing advertising patronage, but it is easy to see how self-interest might prompt such action as that by which the *Herald* and the *Tribune* have been the sufferers. We regret that a newspaper should lose money by standing for a principle, but we cannot but believe that the public is the gainer by the transaction, and that if all the liquor and beer and tobacco advertising [fraudulent patent medicine and quack advertising] were withdrawn, both the newspaper publishers and their subscribers would be the better off, for if money were not wasted on beverages and tobacco [nostrums] it would be available for the purchase of other commodities which in turn would be an advantage to manufacturers, dealers and advertising mediums...Any one who takes the trouble to compare the editorial and news policy of many periodicals with the advertising columns will find grounds for belief that the liquor [proprietary medicine] advertisements strongly influence, if they do not control, the editorial policy."

Medical News

CONNECTICUT

Personal.—Dr. William F. Verdi, surgeon in charge of the St. Raphael Hospital, New Haven, has resigned. Dr. Verdi had the title of chevalier conferred on him by the king of Italy.

Tuberculosis Homes.—The State Home for Tuberculosis Patients at Meriden and the home in Fairfield County at Shelton were opened August 1. The home at Cedar Mountain is also practically ready for opening.

Epileptic Colony.—The commission appointed by Governor Weeks, under the act of the last general assembly, has purchased the Rock Spring Farm at Mansfield as a site for a state epileptic colony. Dr. Max Mailhouse, New Haven, was a member of the commission.

Show No Mortality.—According to the monthly bulletin of the Connecticut State Board of Health for July, twenty-five towns of the state report having no deaths during the month. The death rate for the state shows 19.3 per 1,000. Infantile paralysis was reported from five towns, there being 18 cases during the month.

Appropriation Asked.—The board of health of New Haven has asked the board of finance for an appropriation of $400,000 for health purposes for 1911, $100,000 of which is for collection and reduction of garbage, $220,000 for a garbage incinerator, and $75,000 for a contagious disease hospital. Last year only $33,000 was appropriated for the work of the department.

GEORGIA

Uniformed Inspectors.—Inspectors of the board of health of Augusta are to be fully uniformed in a manner similar to the police.

Personal.—Dr. Howard J. Williams has resigned from the medical board of Macon Hospital, to take effect October 1. ——Dr. Bernard Wolff has resigned from the board of health of Atlanta, and has been succeeded by Dr. Rufus T. Dorsey. ——Dr. T. Neal Kitchen, formerly of Columbus, has resigned as president of the Muskogee County Medical Society and has moved to Warm Springs. Dr. Dexter becomes president of the county society.

To Complete Sanatorium.—The state legislature has made an appropriation of $50,000, $30,000 for completing the buildings and equipping the new state sanatorium for tuberculosis, and $20,000 for maintenance during 1911, as provided for in the bill introduced by Dr. Hardman of Jackson County, and Dr. Brown of Fulton County.——Fulton County Commissioners have appropriated $10,000 of the county funds to aid in the erection of a tuberculosis sanatorium at Atlanta.

Uncinariasis Common.—According to the newspapers, Drs. S. H. Jacobs and C. H. Dobbs, field inspectors for the Georgia State Board of Health, who have been making a tour of inspection of the state since early in May, found that over 75 per cent. of the people of Georgia who live in the country districts have or have had uncinariasis. To August 1, out of 1,055 persons examined, 672 showed the disease. In Emanuel County, 42 out of 43 inspected had the disease. Many school children have been examined and in every instance groundditch has been found.

ILLINOIS

Anthrax Among Cattle.—It is said that anthrax has made its appearance among cattle on a farm at Barrington and 16 have died from the disease. It is so far confined to one farm.

Medical Inspection at Macomb.—Drs. Arthur R. Adams, John W. Hermetet, S. Frank Russell and Arthur K. Drake have been appointed by the Board of Education of Macomb to institute medical inspection of the school children. On account of the financial condition of the city, the work will be done by these physicians gratuitously.

Personal.—Dr. Harry W. Ackermann, Rockford, has been appointed first lieutenant of the Third Regiment of the National Guard.——Drs. Malford Hamm, Lay G. Burroughs, and Edgar A. Cook have been appointed township physicians at Edwardsville.——Dr. Julius H. Hess, Chicago, has returned from four months spent among the pediatric clinics of Europe.

Homes for Convalescent Insane.—The Society of Mental Hygiene, recently organized in Chicago, as part of its method of looking after patients who have been in insane hospitals, will endeavor to place patients either recovered or on the way to recovery in homes on farms and elsewhere. This plan has been tried in other states and to some extent in Illinois. The crowded condition of the hospitals for the insane has made this almost a step of necessity. Dr. Vaclav H. Podstata, formerly superintendent of the Elgin State Hospital, has been given charge of this work, and Miss Elnora Thompson, until recently head nurse at the state hospital but now of Hull House, is assisting. The after-care committee will endeavor to extend the work and put it on a more responsible basis.

Chicago

Birth Returns.—The Chicago Woman's Club has called attention to laxity in enforcing the ordinance requiring the reporting of births within thirty days by physicians and midwives, and suggests that the health department should enforce the law in this respect. One of the daily papers commenting on this action says that only vigorous enforcement of the ordinance and application of penalties for neglect to comply, without discrimination, will bring about a needed improvement in Chicago's vital statistics.

An Appreciation of Dr. Ricketts.— The *University of Chicago Magazine* for July contains an obituary of Dr. Howard T. Ricketts and an article in appreciation by Dr. Ludvig Hektoen. Dr. Hektoen says that important results in the battle against infectious diseases will follow the work of Dr. Ricketts, who died of typhus fever in Mexico in May, and he believes that the publication of the typhus researches of

Dr. Ricketts and Mr. Wilder in their final form will settle the moot questions regarding the disease.

Health in Chicago.—The mortality statement for the week shows an improvement over the corresponding period of last year, especially in respect to infant mortality. There were 42 fewer deaths under one year of age and 22 fewer under five years of age. Deaths from diarrheal diseases among children were 53 fewer than during the corresponding week of last year. Ice cream is still being given attention by the health department and the study of typhoid fever under Dr. Lumsden still goes on. During the week ended August 19, 78 cases of typhoid fever were reported as against 40 for the corresponding week of 1909.

Examination of Carbonated Waters.—The *Bulletin of the Chicago Health Department* for the past week gives the results of the examination of 66 samples of carbonated water in the form of seltzer, ginger ale, pop, or sodas of various colors. It was found that 18 of them contained lead; in 3 samples ¼ grain per gallon; in 3 samples, 1/10 grain per gallon; in 8 samples, 1/20 grain per gallon; and in 4 samples, 1/40 grain per gallon. Eight factories were found marketing the waters containing lead; six were closed, and the other two ordered to improve their equipment or methods. The pops sold in bottles stoppered with metal stoppers were the objectionable ones. It was found that the stoppers contained from 50 to 90 per cent. of lead. Investigation was undertaken at the suggestion of one of the physicians of the city who, in an investigation, found that numerous cases of illness among children were caused by these carbonated waters.

INDIANA

Hospital at Frankfort.—The new tuberculosis hospital at Frankfort was opened August 9. The hospital consists of an administration building and six cottages for patients, located on a tract of five acres of beautifully wooded land.

Library Destroyed.—The office of Dr. James A. Stafford, Millville, was destroyed by fire recently, burning up his library and complete record of cases of fifty years of practice, which Dr. Stafford had ready for publication in book form.

Deaths and Births in Goshen.—Dr. Albert C. Yoder, secretary of the city board of health, Goshen, reports 8 deaths and 21 births for the month of July. This means an annual death rate of 10.66 to the 1,000 and an annual birth rate of 28 to the 1,000.

Tuberculosis Farm.—Tent houses have been erected on the tuberculosis farm at Evansville, known as the Boehne Farm, in honor of Congressman John W. Boehne, who gave $10,000 to the farm during the last year. A brick hospital building is being erected.

Advocates State Pasteur Institute.—Dr. William G. Wegner, county health commissioner at South Bend, advocates the establishment of a state Pasteur institute for the prevention of rabies. He favors the addition of 25 cents to the dog tax to create a fund for this institute.

IOWA

Homeopathic Graduates.—Dr. George Royal, dean of the homeopathic department of the State University of Iowa, calls attention to an error in the total number of graduates given for that school in THE JOURNAL, Aug. 20, 1910, the Educational Number. The number of graduates reported was eleven instead of seven. This correction increases the number of homeopathic graduates for the entire country to 183 instead of 179.

KENTUCKY

Personal.—Dr. Henry McKenna has been appointed intern in St. Joseph's Hospital, Louisville.——Dr. William V. Neel, health officer at Henderson, has undergone an operation for appendicitis.——Dr. James C. Mitchell, Louisville, has been appointed a member of the State Board of Health.

Tuberculosis Dispensary.—The dispensary organized by the Louisville Antituberculosis Association as the first dispensary of its kind in the city has shown great growth since its organization. There are now 287 persons under its care. During the past month 1,051 visits have been made to patients by Dr. A. M. Forster, who is in charge of the dispensary, and by the staff of four visiting nurses who give all their time to the work.

Enforcing Health Ordinances.—It is reported that Health Officer Edward Grant of Louisville is endeavoring vigorously to enforce the ordinance in regard to reporting notifiable diseases. He recently swore out warrants for five physicians for failure to report cases of typhoid fever under their care. It is said that many cases of typhoid and other contagious diseases have not been reported as required. Dr. Grant has also had the school buildings of the city inspected during the vacation season and many sanitary improvements have been recommended.

State Health Board Appointments.—At the annual meeting of the State Board of Health at Louisville, August 11, the following heads of new offices in the health department, created by the last general assembly, were appointed: Dr. W. Lucien Heizer, New Haven, superintendent of vital statistics; Dr. Lillian H. South, Bowling Green, state bacteriologist; Prof. Frederick Mutcher of Western State Normal School, assistant state chemist; Dr. Paul Hansen, formerly of the Ohio State Board of Health, was elected state sanitary engineer. Dr. Joseph N. McCormack, Bowling Green, secretary of the board, made his annual report in which he stated that there were 129,717 cases of illness in the state during the past year, 6,500 of which were due to tuberculosis. He estimated that the cases of sickness cost an average of $94 for medical care, drugs and loss of time, placing a total annual tax on the people of the state of over $12,000,000, nearly double the total annual revenue of the state. The report goes on to say that in order to prevent at least a large portion of this loss, "so far as this generation goes, an appeal to the common sense of the business world gives greatest promise of success. The facts and the losses need to be verified and iterated and reiterated for their significance to be recognized. The employing classes want to live, and in a way want their employees to live. If shown that it would be cheaper to improve sanitary conditions and keep their employees well than to bring in immigrants to die of the same neglect, and that they and their families are likely to sicken and die prematurely from the same causes, it would impress them."

LOUISIANA

Screens in Public Markets.—Dr. William H. Block, acting secretary of the New Orleans Medical Society, has presented to the mayor of New Orleans copies of resolutions adopted by the society, advocating the screening of public and private markets in the city where food is exposed for sale. Dr. William T. O'Reilly of the city board of health, has also reported that he would introduce an ordinance in the council for the same purpose.

The Uncinariasis Commission.—The State Board of Health has authorized the appointment of a medical inspector to be placed at the head of the new department of the State Board of Health for the eradication of the hook-worm. The inspector will receive a salary of $3,000 a year, of which sum the Rockefeller Hook-Worm Commission, through Mr. Wickliffe Rose, has guaranteed $2,500 and the traveling expenses of the inspector, as well as the salaries of other assistants.

Antituberculosis Camp.—The Louisiana Antituberculosis League has established a camp at Todd for the treatment of incipient cases of tuberculosis. The second and third stage patients will be cared for by the Charity Hospital with the aid of the legislature, which during the last session appropriated $10,000 a year for their care at that institution. The camp consists of a hotel which cost $6,000, and eight cottages each costing $400. An artesian well has been bored and the water is reported to be of good quality. The camp is said to have an ideal site for the purpose.

Personal.—Dr. D. Harvey Dillon, president of the State Board of Health, and Dr. Edward S. Kelly, secretary, have resigned.——Dr. Edward L. McGehee has been made president of the reorganized State Board of Medical Examiners; Dr. John G. Martin, vice-president, and Dr. Albert B. Brown, secretary-treasurer.——Dr. John B. Elliott, Jr., New Orleans, has been promoted to the chair of theory and practice of medicine to fill the place made vacant by Dr. George Dock. ——Dr. C. W. Groetsch, New Orleans, is spending the summer in Canada, where he is making a study of Canadian hospitals.

MARYLAND

Quarantine Established.—Quarantine has been declared at Fort Washington on the Potomac below Washington, on account of the breaking out of scarlet fever in Company 44 of the Coast Artillery there.

Meat Condemned.—Dr. J. McPherson Scott, mayor of Hagerstown, has started a crusade against the selling of unwholesome meat there. One-half of ten carcasses exposed

for sale were condemned as unfit for food by the state live stock inspector.

For a Hospital.—The Board of Trade of Havre-de-Grace has taken up the project of a hospital in that town, and has appointed a committee to investigate hospitals in similar towns. A temporary hospital of 25 beds will meanwhile be provided and subscriptions will be raised and the legislature will be asked for an appropriation; $3,000 annually is required.

Endowment for University.—A strong appeal is being made for contributions to the endowment fund of the University of Maryland. The institution is now in its one hundred and third year and it is claimed that it is a civic duty of the people of Maryland to give it financial aid. It has not shared in the benefactions of this community as it should and as other similar institutions here have, and such an appeal should meet with generous response from our public-spirited citizens. A considerable sum is already in hand and invested in safe securities. The charter makes the principal inviolable. A large part of this fund belongs to the medical department, including endowments of three scholarships and one chair (physiology). A vigorous campaign will be made on this behalf this fall.

Baltimore

Personal.—Dr. J. M. T. Finney has returned from Europe and is at Chester, Nova Scotia.——Dr. Thomas Shearer is at Ontario, Canada.——Dr. Howard A. Kelly is visiting London and Paris clinics.——Dr. Donna Waldran is in Edinburgh.

Typhoid Fever.—For the week ending August 20, there were 121 cases of typhoid fever reported, with 11 deaths. Eight cases have been reported in Troop A, which camped at Gettysburg in July, and the governor has called on the State Board of Health to make an investigation.

New State Laboratory.—The new laboratory at the State Health Department for the examination of water, milk and ice cream under the pure food law, was ready for work August 22, and the inspectors have entered on their work under Dr. Charles Caspari, Jr., state pure food commissioner.

Medical College News.—The Maryland Medical College announces that the day courses for first and second year students will be continued as usual, in addition to the evening courses recently announced for the same.——The College of Physicians and Surgeons announces that for the next session not more than 75 students will be admitted to either the freshmen or sophomore classes. The addition to Mercy Hospital connected with this college has reached the second floor. It will more than double the size of the hospital.

Discoverer of Saccharin Dies.—The death of Dr. Charles Fahlberg is announced at Bad Nassau, Germany, August 16. It was he who, working here with Remsen and under Remsen's direction and in Remsen's laboratory in 1879, made the discovery of saccharin. Shortly after, he left here and went to Germany, where he patented the product and amassed a fortune out of it. For this discovery Remsen was awarded a medal at the St. Louis Exposition in 1904 by the Society of Chemical Industry of England. Saccharin is a coal-tar product, and when pure possesses about 500 times the sweetening power of cane sugar. It is extensively used in the manufacture of canned goods when pure food laws do not prohibit it.

NEW YORK

Personal.—Drs. Roswell Park and Charles Cary, Buffalo, and A. J. Bedell, Albany, have returned from Europe.——Dr. Harry Weed, Buffalo, and Dr. E. C. Taylor, Dr. and Mrs. W. M. Butler and Dr. Alfred C. DuPont, New York City, have sailed for Europe.

Scarlet Fever and Diphtheria.—The mortality from scarlet fever is becoming alarmingly large. In July, 1909, there were 140 cases of scarlet fever reported, with 9 deaths, or 6.4 per cent., while in 1910 there were 156 cases of scarlet fever reported, with 15 deaths, or a mortality of 9.6 per cent., an increase in mortality of nearly 3.2 per cent. over the same period of last year. It can safely be predicted that with this showing for the summer months with the opening of schools in the fall scarlet fever will continue epidemic, and that the mortality will increase. In July, 1909, there were 24 cases of diphtheria reported, with 1 death, a mortality of 4.1 per cent.; in July, 1910, there were 60 cases of diphtheria reported, with 13 deaths, a mortality of 21.6 per cent.

Buffalo

Tuberculosis Hospital.—Bids were opened August 13 for the building of the county tuberculosis hospital at Brighton, near Rochester, the lowest being a little more than $60,000. The work includes an administration building, nurses' home, a number of cottages and a sewage disposal plant.

Preventing Pertussis.—To stamp out the present epidemic of pertussis before the schools open, the Health Department has adopted a method similar to that used in Seattle and Chicago for other diseases, namely, to display between regular pictures at the moving-picture theaters slides prepared by the health department relating to the dangers of pertussis and the means which should be adopted to prevent its spread. Acting Health Commissioner Scahaefer has already placed the moving-picture houses and pleasure steamers under surveillance, so that persons suffering from the disease may be apprehended. Pertussis caused 782 deaths in the State of New York last year.

New York City

A Roof Garden for Babies.—What is believed to be the first regular roof garden for ailing babies has just been opened at the Flower Hospital. This garden has been constructed along the accepted styles for roof gardens even to the music and entertainments. In clear weather the roof garden does duty for the entire twenty-four hours, being used as a dormitory at night. Large returns in the way of improved health among the babies is expected from this innovation.

The Sale of Morphin.—A drug clerk was recently arrested for selling morphin; the purchaser was also arrested. The assistant district attorney refused to have the complaint pressed. The clerk had registered the sale and the note "she has the habit." It seemed, therefore, that there had been no violation of the law. The sale of morphin is legal, it seems, providing it is properly labeled. The Board of Health has power to amend the sanitary code and place the sale of morphin on the same basis as that of cocain.

A Large Foundation.—Mr. John Masterson Burke of New York announced some eight years ago that he would make a foundation in order to endow a home in or near New York for convalescents. At the time of Mr. Burke's death last December, this foundation amounted to $5,000,000, and personal property has been added to the amount of $2,000,000. The will was contested by relatives, but the court has decided that it is valid. There is, therefore, about $7,000,000 with which to begin building, but fear of further litigation will make it advisable to postpone active work for some time.

OHIO

For Cleaner Food.—The City Board of Health of Washington has passed resolutions making stringent regulations for dealers in all classes of food supplies in regard to keeping food clean, and also for the disposal of garbage and taking care of slaughter houses.

Visiting Nurse Provided.—The physicians of Springfield having in charge the free milk dispensary have hired a nurse to visit the families where babies are being treated at the dispensary to see that the suggestions of the physicians are carried out regarding the care of the children and to locate other children requiring dispensary care.

Personal.—Dr. Jane W. Carroll has been elected supreme medical examiner of the Ladies' Catholic Benevolent Association at Cleveland.——Dr. Otis L. Cameron, Cincinnati, has resigned as a member of the board of health. Dr. John D. Miller has been appointed to fill the unexpired term.——Dr. A. Garner, Hillsboro, president of the city council, has become mayor through the resignation of Mayor Puckett.——Dr. Oscar H. Sellenings, a member of the Columbus City Board of Health, has been elected to the chair of children's diseases in the Starling-Ohio Medical College.

Tuberculosis.—Toledo has established its first outdoor camp for patients with tuberculosis on a tract of ground comprising several acres, the use of which was given by Judge John F. Kumler. There are about twenty patients in the camp, housed in tents. The work will be extended throughout the winter.——City Health Officer Clemmer of Columbus has asked the local board of education to provide for the building of open-air rooms for tuberculous pupils in all new school buildings to be erected by the board.——The first city tuberculosis dispensary in Cleveland will be located in the Eighth Precinct police station, where four rooms will be fitted up for the purpose. Two of the six city nurses will make the rooms their headquarters and a ward physician will have daily office hours there.

School Inspection.—Dr. Louis F. Bucher, Dayton, who has been appointed by the board of education to begin medical

inspection of school children, has just returned from a six weeks' eastern tour, where he has studied the system employed in various cities, and will inaugurate a systematic plan of keeping records of the inspection of the school children in Dayton.——Medical inspection of the school children will be inaugurated this year at Youngstown, and four nurses have been employed, whose duty it will be to visit the schools daily and inspect sanitary conditions and look after suspicious cases of skin troubles, infectious diseases, etc., among the children. At the beginning of the term, the work will be started by four physicians, who will make a thorough examination of all pupils.

PENNSYLVANIA

Smallpox in State.—Fifteen cases of smallpox have been reported from Honesdale, Herrick Center and Tanners Falls. Men from the state health department have been detailed to look after these cases.

Typhoid at Wilkes-Barre.—The typhoid epidemic at Wilkes-Barre has become so serious that action has been taken against the company supplying water to the city for non-compliance with the ordinance requiring filtered water. The water company, it is understood, does not regard the ordinance as valid.

Cresson Sanatorium.—Bids for four of the buildings for the tuberculosis sanatorium to be erected at Cresson Springs on the ground given by Andrew Carnegie were opened at the state health department August 9. The buildings will be of stone procured on the ground. The sanatorium will cost $250,000, exclusive of equipment.

Bad Conditions Exist at Dixmont.—Dr. Frank Woodbury and Francis J. Torrance, secretary and president, respectively, of the State Board of Charities, denounce the conditions existing at the Dixmont Asylum for the Insane. They found 997 patients in the institution, while the building was erected to accommodate 500. Steps are to be taken to distribute patients to other institutions.

Report of Pure Food Crusade.—During Governor Stuart's administration, from January, 1907, to Aug. 1, 1910, according to the report of the State Dairy and Food Commissioner, 2,093 prosecutions for food adulteration have been brought, of which 861 were under the oleomargin act. The fines collected from these cases totaled $105,964.84, and 11 men were committed to jail for terms of from 20 days to 6 months each.

Philadelphia

Arrests Reveal Renewed Cocain Traffic.—The cocain traffic, practically wiped out by the recent crusade of the State Pharmaceutical Board, has again been resumed. Two men charged with the illegal sale of the drug in large quantities were arrested, August 19, by an agent of the board and held in $1,500 bail each for court.

Children's Pavilion for Jewish Sanatorium.—The Philadelphia Jewish Sanatorium for Consumptives has completed plans for a children's pavilion at the farm at Eagleville. In this pavilion children less than 12 years old will be treated free. Of the $5,000 necessary for the erection of this pavilion, $1,250 has been donated by a friend of the institution.

Tuberculosis Traced to Cheap Ice Cream.—A dozen cases of dangerous infection have been traced to the confection which is sold by the push cart vendors. Follicular tuberculosis has been traced to this ice cream. An investigation has been started by the State Dairy and Food Commission, and prosecutions will follow as soon as the samples have been analyzed.

Egg Dealer Held for Court.—At a hearing, August 16, of a man charged with selling eggs unfit for food, testimony was given that the defendant had sold eggs which, when fed to guinea-pigs, had killed them. These eggs were examined by Professor LaWall, chemist for the State Dairy and Food Commission, and Dr. Randall C. Rosenberger, of the Jefferson Medical College, and were found to contain 10,000,000 bacteria to the c.c.

Personal.—Dr. James Hendrie Lloyd has been elected visiting neurologist to the Methodist Hospital.——Dr. Herbert Fox, chief of the State Department of Health laboratories at the University of Pennsylvania, was in Lancaster August 18, investigating infantile paralysis.——Dr. Charles Lester Leonard has gone to the International Congress on Radiology and Electricity in Brussels.——Dr. Edward F. Malone, of the Wistar Institute of Anatomy, has been appointed assistant professor of anatomy in the medical department of the University of Cincinnati, of which Prof. H. M. Knower was recently appointed head.

Bottlers Arraigned.—As a result of the crusade of the State Dairy and Food Commission, a large number of bottlers charged with adulterating soda-water were arraigned August 16. Most of the bottlers entered bail for their appearance in court, which action has led to the belief that saccharin dealers are backing the bottlers and are prepared to finance the fight against the state's charges. The results of the hearings of August 16 were that four men paid fines amounting to $200 and costs, and nine dealers were held under bail for court. At the hearings August 17, one dealer paid a fine of $25 and costs and six entered bail for their appearance in court.

City's Milk Supply Inquiry.—Because the large milk dealers have raised the price of milk and insisted that such advance is necessary to insure pure milk, the Bureau of Municipal Research will conduct a thorough investigation of the city's milk supply. This investigation will begin at the source of the supply—the farm—and continue through the handling by shipper and the dealer and its delivery to the consumer. The first bulletin in the inquiry was issued August 18 in the form of a list of fifteen questions to dairymen relating to the conduct of dairy farms and the milking and handling of the product, covering all essential points in the production of clean and sanitary milk.

WEST VIRGINIA

Personal.—Dr. Hugh H. Carr, Fairmont, accompanied by his father, Dr. Lloyd L. Carr, of New York, has just returned from six months' study in the hospitals of Vienna and Berlin.——Dr. Leech K. Cracraft has resigned as city health officer of Elm Grove, and Dr. R. M. Peddicord has been named in his place.

Tuberculosis Sanatorium.—The county commissioners of Ohio County will erect a tuberculosis sanatorium at a cost of $2,500.——The dispensary of the Antituberculosis League of Wheeling has been opened at 1413 Chapline Street. One of the leading physicians of the city will be in attendance each day. The dispensary now occupies three rooms.

WISCONSIN

Sanitary Drinking Fountains.—The city of Green Bay will abolish the public drinking cup September 1. Sanitary drinking fountains have been erected in the streets and parks of the city.

Personal.—Dr. C. A. Harper, secretary of the State Board of Health and Vital Statistics, is a candidate for the general assembly.——Dr. Frank E. Darling, registrar of vital statistics of the Milwaukee Health Department, has resigned, but has been asked to reconsider his resignation.

Change in Health Department.—The city of Superior, which now employs three physicians to look after the work of the health board, has in view the employment of one man at a sufficient salary to devote his whole time to the work. It is believed that under this plan more efficient work will be done.

Sanitary Homes.—The influence of the crusade of the Antituberculosis Association in this state is seen in the construction of homes. Hundreds of homes built in Wisconsin this year make ample provision for open-air sleeping. Architects and builders have recognized this demand for pure air and plenty of sunlight and have begun designing buildings with this idea in view.

Enlisting the Children in Sanitation.—Health Commissioner William C. Rucker of Milwaukee has introduced the plan of organizing companies of boys and girls of the city to be called the Health Guard, who will be enlisted in the work of keeping the city clean. They will see that back yards and alleys are kept clean and sanitary. The organization will be on a military basis, and daily reports will be made to headquarters, which are to be established in the hall of Lapham Park. Dr. Rucker is to be commander-in-chief of the organization. He will give frequent lectures to the children, instructing them in their work and show disease in its various forms. This follows the plan inaugurated in New York City by Colonel Waring some years ago.

GENERAL NEWS

Intern Wanted for Government Insane Hospital.—The Civil Service Commission will hold examinations October 5, at the usual cities throughout the country, for a medical intern in the Government Hospital for the Insane at Washington, D. C., and for other similar vacancies as they may occur. Positions are held for one year and pay $50 a month and maintenance. Advancement is possible, with increased pay. This hospital has over 3,000 patients and employees. For several years it has been difficult to secure enough persons to fill these positions, so those who are qualified have a good chance to be successful. Further information may be had from the commission at Washington.

Antirabic Treatment.—Public Health Report of the Hygienic Laboratory of the U. S. P. H. and M.-H. Service for August shows that for the year ended June 30, 1910, 60 patients were treated at the laboratory with antirabic inoculations. Of these, 57 completed the treatment. No deaths were known to have occurred among these patients. Of the 60 patients, 47 were actually bitten or scratched by the teeth of the animal; 10 had scratches or wounds exposed to the saliva, or were exposed during laboratory manipulations. Fifty-five persons were bitten by dogs, 3 were bitten by cats, 1 by a cow, and 1 by a mule. Examinations show that 54 of the exposures were to actual rabies as shown by the laboratory examination. In addition to the inoculations at the laboratory, antirabic treatments were sent out to state boards of health in the form of dried cords preserved in glycerin. This method of transporting the virus a long distance without appreciable loss of potency has been found successful. Nine hundred and fifty-one treatments were thus sent out to state boards in ten different states.

International Medical Association.—The volume of transactions of the fifth annual session of the International Medical Association, Mexico, whose membership is made up, with a few exceptions, of physicians from the United States practicing in Mexico, shows that an interesting meeting was held at Aguas Calientes, January 25 to 27, 1910. About thirty of the seventy-five members of the association were present. Dr. S. H. Hodgson, Tampico, president of the association, presided. Among the foreign physicians present were: Dr. Howard A. Kelly, Baltimore, who read a paper on "Fibroid Tumors," and Dr. John M. T. Finney, also of Baltimore, who took part in the discussions. Dr. Carlos E. Husk, Santa Barbara, was elected president; Dr. R. H. L. Bibb president-elect for 1911; Dr. F. W. Taube, vice-president; and Dr. J. S. Steele was reelected secretary-treasurer. The transactions contain, in addition to the minutes, papers and discussions, a half-tone picture of the members present at the meeting, some editorial notes, and some poetry. The work of the meeting shows that the Mexican physicians are up to the hour in medical subjects.

Meetings to Be Held in September.—A number of national and state societies are to hold annual meetings next month. Among them are the following:

Amer. Acad. of Ophthalm. and Oto-Laryn., Cincinnati, Sept. 19-21.
Amer. Assn. of Obstetricians and Gynecol., Syracuse, Sept. 20-22.
American Public Health Association, Milwaukee, September 5-9.
Amer. Roentgen Ray Association, Detroit, September 28—October 1.
Kentucky State Medical Association, Lexington, September 28-29.
Medical Society of Missouri Valley, Council Bluffs, Iowa, Sept. 1-2.
Michigan State Medical Society, Bay City, September 28-29.
Mississippi Valley Medical Association, Detroit, September 13-15.
Oregon State Medical Association, Portland, September 7-9.
Wyoming State Medical Society, Casper, September 27.

The fifth annual meeting of the Medical Association of the Southwest will be held at Wichita, Kansas, Oct. 11 and 12. The past meetings of this society have had programs of a high order and as the society has almost nothing of a business nature to come before it the whole session is practically devoted to the consideration of scientific matters. The central location of Wichita, coupled with the fact that the committee promise an unusually good program, should call forth a large attendance of the best men in the district, which comprises Texas, Arkansas, Missouri, Kansas and Oklahoma.

The twenty-third annual meeting of the Medical Society of the Missouri Valley will be held in Council Bluffs, Iowa, September 1 and 2, under the presidency of Dr. A. B. Somers, Omaha. The officers feel that the date is a good one, with prospect of good weather.

FOREIGN

Pellagra in Austria.—The Austrian government has constructed in southern Tyrol six modern steam rye bakeries, which are under the direct supervision of the governor of the province, in order to stop the popular use of infected corn meal, which is held to be responsible for the pellagra existing in that country. In order to make the rye bread popular with the masses, the authorities have fixed the price at which it shall be sold. The Hungarian government has adopted strict regulations against the sale of corn meal under any other than its own name.

Cholera.—The epidemic of cholera that has prevailed throughout a large portion of Russia seems to be extending in other parts of Europe. A considerable number of cases have been reported from southern Italy, and King Emanuel and Queen Helena are taking a deep interest in the situation. The authorities in Austria and Germany are taking measures to prevent the spread of the disease in their countries, and measures to prevent the introduction of the disease into England have also been the subject of consideration by the British government. The United States government has also given instructions to consular officers at European ports as to the prevention of the embarkation of infected immigrants to this country. During the week ended August 6, 20,468 cases were reported throughout Russia with 8,679 deaths.

LONDON LETTER

(From Our Regular Correspondent)

LONDON, Aug. 13, 1910

The Increase of Lunacy

As shown in previous letters to THE JOURNAL, the number of insane persons in Great Britain, both absolutely and in proportion to the population, has considerably and steadily increased in recent years—a fact which has given much concern to those interested in public health and has been taken by some to be one of the indications of race degeneracy of which much is now written and so little is proved. There is little reliable foundation for these gloomy forebodings. The greater strain on the nervous system produced by civilized life certainly seems to have produced some increase in insanity. What the real increase amounts to is difficult to say, however, for the alarming statistics which are given have to be discounted by this consideration: The number of insane given is based entirely on the number who have been certified and sent to asylums. With the great modern improvement in asylums people are not so loath to send in their friends as in former times. Therefore many are now admitted who would not have figured in the statistics in former times. The sixty-fourth report of the Commissioners in Lunacy, which has just been issued, shows that the number of certified insane under care in England and Wales on Jan. 1, 1910 was 130,553 or 17,666 more than a year previously. This increase may be contrasted with that of 2,703 for 1908, of 2,096 for 1907, and 2,009 for 1906. The average annual increase for the 10 years ending 1909 was 2,394. Thus the increase for the last year was 628 below the average. A better index of the increase of insanity is obtained by comparing the figures with those of the general population. In the past 50 years the number of certified insane has increased by 255 per cent. while the population has increased by only 83.7 per cent. The proportional figures for more recent years are more satisfactory. The estimated population in 1910 is 12.2 per cent. above that of 1900 and the number of insane 22 per cent. In 1909 there was a marked approximation between the two series, the increase of population being calculated to be 1.16 per cent. and the increase of the insane 1.37. Thus, there is a tendency for the two series to meet and the increase of insanity to cease. A cleaner estimate of the growth of insanity is obtained by taking the ratios which the number of insane bear to the total population. On Jan. 1, 1910 the total number of notified insane was 36.1 per 10,000 of the general population. Ten years earlier the figure was 33.06, so that an increase of 9.2 per cent. had taken place in the 10 years. In the last of these years, however, the increase had fallen to 0.22 per cent. Statistics dealing with the causes of insanity are given in tabular form. Of 50 suggested causes, 12 were considered the principal cause in two-thirds of the cases. In their order of comparative frequency they were as follows: (1) the puerperal state; (2) epilepsy; (3) sudden mental distress; (4) alcoholism (the yearly average of admissions in 1907-08 in which alcoholism was the principal cause, was males, 1,589; females, 709); (5) influenza; (6) prolonged mental distress; (7) senility, which often stands alone as the determining condition of dementia; (8) the climacteric in women; (9) congenital mental defect; (10) insane heredity; (11) injuries; (12) syphilis. These 12 causes are therefore regarded as exercising the greatest influence in the production of insanity but in many cases the causation was complex, several causes combining.

The Revision of the Pharmacopeia

The second report of the Committee of Reference in Pharmacy appointed by the General Medical Council contains several important alterations. The names of three preparations have been altered, namely, liquor iodi fortis, liquor magnesii carbonatis, and hydrargyri oleas, respectively to pigmentum iodid, liquor magnesii bicarbonatis, and hydrargyrum oleinatum. For the preparation of linimentum hydrargyri the following formula has been substituted as giving a more permanent preparation than the official one: mercury ointment, 5; ammonia solution, 4; camphor liniment, 8. The two last are to be shaken together in a bottle and the ointment then triturated with them. To avoid the well-known and dangerous incompatibility of liquor arsenicalis with solutions of alkaloid salts, especially strychnin, with which it is often prescribed, sometimes with fatal results from precipitation of the strychnin and ingestion of the total quantity in one dose, a new formula has been substituted in which the solution is acid. Extractum nucis vomicæ is still to be standardized to contain 5 per cent. of strychnin, in spite of the Brussels International agreement by which it should contain 16 per cent. of total alkaloids. The specific gravity of ether is to be 0.720 instead of 0.735. On account of being easier to make and, being free from objectionable color, a plaster made with atropin sulphate is to be substituted for emplastrum belladonnæ. Extractum hydrastis liquidum is to be standardized.

Fatal Poisoning From the Use of Phenol as a Dressing

Though phenol (carbolic acid) is extensively used in surgery the cases in which poisoning has resulted from its external use are few. An inquest has been held on a girl aged 2 years who was run over by a van and taken to St. Thomas's Hospital with a wound of the leg. The mother was given a lotion of 1 to 20 phenol and was directed to add an equal part of water to it and use the product as a dressing. When she applied the lotion the child screamed. Two days later the child was admitted with symptoms of phenol poisoning from which she died. At the inquest evidence was given that the child was a subject of the status lymphaticus which caused idiosyncrasy to the carbolic acid. The lymphatic glands were four times the normal size and the spleen twice the normal size. The jury returned a verdict of accidental death and did not blame any one.

Decline in the Sale of Nostrums

It is satisfactory to be able to report a slight decline in the sale of nostrums in spite of the tremendous efforts made by their exploiters to push their sale, by lavish expenditure in advertising. Probably an important cause of the decline is their exposure in the book entitled "Secret Remedies" published by the British Medical Association. As nostrums are subject to a duty by the government their sale can be exactly gaged from year to year. The revenue from the stamp duty on them during the year ending Mar. 31, 1910 was $12,500 less than in the preceding year and $110,000 less than in the year before that. Their sale, however, is still enormous, as is shown by the fact that the revenue derived from them in that last financial year amounted to $1,550,000. As the duty on each article of the value of one shilling (about 25c) or under is three half pence (3 cents) it follows that the total number of articles sold must have been about 50,000,000. Taking into account the fact that a considerable proportion cost much more than a shilling, few less, the annual revenue income derived by their exploiters must amount to over $12,500,000.

The Dangers of Flannelette

The shocking tragedies by which children are fatally injured due to the inflammable nature of flannelette have from time to time been reported in previous letters to THE JOURNAL. A light comes in contact with a child's flannelette shirt or gown and in an instant the child is enveloped in flame and burned to a horrible and usually fatal extent. By impregnating flannelette with certain salts it can be rendered non-inflammable, but the increased cost resulting prevents the poor from buying this article. An important series of tests on the inflammability of certain textiles has been carried out by the British fire prevention committee, which has also made suggestions for legislation on the subject. The test proposed is that a square yard of the material shall be ten times washed with soap and water and ironed. Being then dry, it is suspended vertically from one edge and a standard flame is applied to the bottom edge for from 15 to 30 seconds. If then not more than one-twentieth of the whole area of the fabric is burnt within 60 seconds the material shall be classed as non-flaming. The committee suggests that material which cannot be so classed shall have woven or printed on every yard of the selvage the words "burns rapidly,' or, if sold in the form of garments, the words shall appear twice on the principal band or inner hem; that material or garments sold as non-flaming shall be similarly marked with the words "non-flaming;" that any firm selling "union" (a mixture of wool and cotton) or flannelette contrary to these regulations, or selling as non-flaming material which does not comply with the test, shall be liable to prosecution; that parents and guardians shall be specifically responsible for death or injury by fire to children wearing flannelette or union marked "burns rapidly;" and that local authorities shall issue warnings on the subject. The committee found that ordinary flannelette burned with such rapidity that it was often consumed in 60 seconds and was more inflammable after washing than before. Union also proved very inflammable, especially when washed. Flannel and "non-flam" were alike in that they did not carry flame and only the portion within the power of the flame was affected.

Ferro-Silicon*

Ferro-silicon is an alloy made by heating in an electric furnace steel turnings, quartz and coal. The coal reduces the quartz to silicon which then forms an alloy with the iron. Ferro-silicon is used in the manufacture of a certain kind of steel to which it imparts a high tensile strength when present to the extent of rather less than 1 per cent. Owing to ingredients in the substance used in its manufacture the ferro-silicon of commerce gives out highly poisonous gases. Calcium phosphate, which is present in the coal and quartz is reduced to calcium phosphid; arsenic, which is present in both the coal and iron, appears as calcium arsenid. In contact with water or moist air the former gives off phosphuretted and the latter arseniureted hydrogen, both intensely poisonous gases. Phosphuretted hydrogen is fatal if present in so small quantity as 2.5 volumes per 10,000 of air and arseniureted hydrogen is scarcely less dangerous. It is, therefore, not surprising that under certain conditions, as when carried in the cabins of ships, deaths have resulted. But it is only after repeated sacrifice of life that the fact has attracted attention. Some 40,000 tons are annually imported into England from France. The earliest recorded case of poisoning is that of an explosion of iron drums containing ferro-silicon which were brought to Liverpool. A porter was seriously injured, and investigations led to the conclusion that the explosion was due to phosphuretted hydrogen. In January, 1905, during a voyage from Antwerp to New York 50 steerage passengers who lodged over a hold in which ferro-silicon was stored became seriously ill and 11 died. The deaths were certified as due to pneumonia. An official inquiry attributed them to unknown causes, but later a further inquiry revealed the true cause. Many other fatalities have subsequently been recorded on steamers and on canal boats. An exhaustive investigation into the whole subject has been made by Dr. S. M. Copeman under the direction of the British government. He has made the following recommendations which have been adopted by the local government board: 1. Ferro-silicon should not be sent out from the works immediately after manufacture but after being broken up into pieces, as usually sold, should be stored under cover but exposed to air as freely as possible for at least a month. 2. Manufacturers should be required to mark in bold letters each barrel or other parcel with the name and percentage grade, the name of the works, the date of manufacture and the date of despatch. 3. The carriage of ferro-silicon on vessels carrying passengers should be prohibited. When carried on cargo boats it should, if possible, be carried on deck. If it is stored elsewhere the place should be adequately ventilated and cut off by airtight bulkheads from the crew's quarters. 4. Storage places at docks or works should have provision for free access of and be at a distance from workrooms.

PARIS LETTER

(From Our Regular Correspondent)

PARIS, Aug. 12, 1910.

First Meeting of the French Pediatric Association

At the suggestion of Dr. Hutinel, clinical professor of children's disease at the Paris college of medicine, the Société de pédiatrie of Paris some months ago took steps toward the organization of a French and an international pediatric association. The international committee in charge of the organization of the latter met in Paris July 28. The Association française de pédiatrie has just held its first meeting in Paris, July 29 and 30, under the presidency of Professor

* See Editorial in this issue.

Hutinel. Two questions of great importance at present were taken up: (1) the thymus, and (2) cerebrospinal meningitis.

PHYSIOLOGY, PATHOLOGY AND SURGERY OF THE THYMUS

The thymus was the subject of three papers, dealing respectively, with the physiologic functions, the pathology and the surgery of the thymus. Dr. E. Weill, clinical professor of children's diseases at the Lyons college of medicine, who presented the first phase of the subject, concludes that, during extra-uterine life at least, the thymus is not comparable to the glands of ordinary secretion such as the thyroid and the adrenals. There is no evidence that there can be hyperthymic syndromes. All that we know concerning the structure and the functions of the thymus indicates that it is comparable to the lymphatic ganglions. Like the latter (and even more actively) it reacts toward infections and intoxications; and, again like the lymphatic ganglions, it is subject to regressive involution with the progress of age; and the precocity of this regression seems to bear a relation to its great sensitiveness. Dr. Marfan, professor of therapeutics at the Paris college of medicine, considered especially the hypertrophy of this gland among quite young infants and the symptoms on which the diagnosis may be based and those which call for thymectomy. When the diagnosis of hypertrophy of the thymus has been established, mercurial treatment should always be tried. If it fails, the treatment employed in all lymphatic hyperplasias (saline baths, arsenic, iodin, calcium) should be used. The administration of epinephrin by mouth (two to four drops a day) may also be tried. When there are serious complications due to compression, it is necessary to use treatment with more rapid action. If the symptoms do not appear too threatening, one may try to diminish the volume of the thymus by radiotherapy; otherwise thymectomy is the treatment of choice. When the dyspnea and cyanosis are so serious as to forbid recourse to this operation, intubation with as long a tube as possible may be tried; but tracheotomy or a short tube should never be used. If the symptoms are thus improved, one may profit by the amelioration to employ thymectomy.

Dr. René Cruchet, *agrégé* professor at the Bordeaux college of medicine, drew deductions from studies of 77 cases with autopsies. He believes that in acute thymic conditions cases of compression of the trachea by hypertrophy of the thymus are exceptional, and that the volume and the weight of the gland play only a contingent rôle, since glands weighing 2 to 3 gm. may provoke attacks while glands weighing 200 gm. may not. Dr. Cruchet believes that compression of nerves is the most probable cause of thymic disturbances. He remarks that often the thymus is hypertrophied only after respiratory troubles such as croup, pulmonary tuberculosis, pneumonia and bronchopneumonia.

The surgery of the thymus was the subject of a paper by Dr. Victor Veau, surgeon of the Paris hospitals, who believes that the functional results of operation are always encouraging. In the crises of suffocation occurring with a large thymus, operation is urgent and may prevent sudden death. In cases of permanent dyspnea without crises of suffocation, removal of the thymus, while less imperative, is still the therapeutic means of choice. In spasm of the glottis, the propriety of operation is more debatable. It may be considered if the physical signs of hypertrophy of the thymus coexist with the spasm. In a case of this kind, observed by Dr. Veau with Professor Hutinel, the result was decidedly favorable. The effects of thymectomy on thymus stridor have not been so encouraging; often the harsh breathing has persisted after the removal of the thymus. Dr. Veau therefore believes that it is not necessary to remove the thymus when strident breathing exists, but the child should be closely watched. If other symptoms of hypertrophy of the thymus, such as crises of suffocation and permanent dyspnea, appear, thymectomy should be performed immediately. One may promise the parents that the removal of the gland will modify the symptoms, but they should be warned that probably the strident breathing will persist.

CEREBROSPINAL MENINGITIS

In a paper on the bacteriology and epidemiology of cerebrospinal meningitis, Dr. Richardière, physician of the Paris hospitals and Dr. J. Lemaire, former intern of the Paris hospitals, emphasize the dangers from bacillus-carriers, particularly persons with more or less accentuated but sometimes latent, contagious, specific rhinopharyngitis due to the diplococcus of Weichselbaum.

Dr. Moussous, clinical professor of children's diseases at the Bordeaux college of medicine, and Dr. Rocas of Bordeaux have studied the clinical manifestations of cerebrospinal meningitis of children and the means of diagnosis. The most important elements of the diagnosis are furnished by the examination of the cerebrospinal fluid, withdrawn by lumbar puncture, by the precipito-reaction of Vincent-Bellot and by the fixation reaction of Bordet and Gengou.

Dr. Netter, *agrégé* professor at the Paris college of medicine, emphasizes the efficiency of antimeningococcus serum, which, injected intraspinally, acts as a true specific. As a rule, Dr. Netter injects 30 c.c. of the Flexner serum in very young children. In serious or very obstinate cases, he goes as high as 45 or even 60 c.c. In order to obtain good results, it is necessary to renew the injections during the first three or four days of the treatment. It is best, moreover, to continue them as long as the cerebrospinal fluid contains meningococci. The greatest number of cures, and the most rapid, are obtained when the treatment is begun early. It is therefore better, if there is the least doubt, to inject the serum after the first puncture without awaiting the results of the bacteriologic examination, which, however, ought to be a guide for further injections. Along with the essential therapeutic agent, the serum, other therapeutic means should not be neglected. Netter particularly advises giving warm baths for forty-five minutes at 39 to 40 C. (102 to 104 F.) three times a day. They have a very appreciable action on the stiffening, the pain, and even on the temperature. Repeated lumbar punctures are very useful, for they ameliorate the painful symptoms by diminishing the tension and removing a certain quantity of pathologic agents and other products of disintegration.

Drs. Broca and Debré of Paris emphasized the surgical aspects of cerebrospinal meningitis, especially the severe pains at the beginning which, in the abdomen, simulate appendicitis and, in the limbs, simulate osteomyelitis.

The Next International Congress of Educational Hygiene

The next International Congress of Educational Hygiene will be held in 1913 in Buffalo, N. Y.

BERLIN LETTER

(*From Our Regular Correspondent*)

BERLIN, Aug. 4, 1910.

Personal

July 30 Professors Senator and Olshausen, who are resigning on account of advanced age, delivered their farewell lectures. Both addresses were transformed into ovations for the retiring scientists. Especially at the lecture of Senator, Prof. Kraus took the opportunity to emphasize the great importance of the investigator. There is no question that the fame of the Berlin university will be lessened by the departure of these two learned men, for their successors cannot fill their places and give no promise of ever equalling their predecessors. Prof. Franz has been called to succeed Olshausen; he is a former assistant of Bumm.

Professor Rubner has been chosen as rector of the Berlin university for the next student year. This is the seventeenth time that a medical man has been accorded this especially honorable position and among the present force belonging to the university a worthier representative could scarcely have been chosen, for Professor Rubner may well be considered as at present the most important member of the university faculty.

Professor Stock of Freiburg has been appointed director of the eye clinic at Jena in place of Professor Wagenmann.

Professor Payr has been nominated as successor to Professor Krönlein, the well-known director of the surgical clinic in Zurich.

Professor v. Eicken, formerly for many years assistant of Professor Killian, now assistant of Professor Siebenmann in Basel, has been called to succeed Professor Leutert as director of the ear clinic at Giessen.

No Trade Tax on Physicians and Lawyers

In Prussia and in most of the other German states, physicians and lawyers are exempt from tax for carrying on their business on the ground of the provision of the law that professions which are not followed merely for commercial purposes but from ideal interests shall be exempt. In the effort at tax reform which is being made in the deeply involved duchy of Hesse-Nassau the effort is being made by some parties in opposition to the program of the government to remove this special privilege of physicians and attorneys. Fortunately it has been possible for the threatened professions to avert the blow. The Hessian legislature (*Landtag*)

has recently decided that physicians shall be exempt from the trade tax as formerly.

Tuberculin Treatment in Rudolf Virchow Hospital

A separate ward in the Rudolf Virchow hospital has been set apart, the same as last year, by order of the city government, for tuberculin treatment, to be conducted by the institute for infectious diseases under the leadership of its director, Dr. Gaffky. Robert Koch had charge of this work formerly.

Communication of Infection by Eggs

Interesting experiments have been made by the imperial health office to determine the ways in which disease may be conveyed by eggs. The infection of hen's eggs with germs may occur by the contamination of the ready formed egg by germs which are either on the outside of the shell or in some cases may penetrate the shell into the egg itself. Micrococci and non-motile organisms appear not to possess this property of penetrating the shell under ordinary circumstances so long as the egg is kept dry. The principal source of the germs in normal eggs is an infection during their formation; 54 per cent. of the eggs investigated contained germs. The communication of disease by eggs may occur either from the germs on the shell or from those contained in the egg itself. In the transmission of disease by germs, the ability of the germ to resist external influences, such as drying, is of great importance. This method of dissemination of chicken cholera is of minor importance. Paratyphoid bacilli remain viable on egg-shells for 10 days and longer and they may also penetrate the shell into the egg itself. For this reason it is not impossible that, exceptionally, hen's eggs may be the source of a paratyphoid infection of man.

Separation of the Medical Bureau from the Department of Education

The much-discussed question of separating the medical bureau from the department of education on account of the overloading of the latter is finally settled. Next April the bureau will be transferred to the department of the interior. As some important branches of the public-health service are now placed in this department (especially the offices of the sanitary police), it is to be hoped that by the consolidation of the entire medical administration in the department of the interior an effective organization of Prussian sanitation will be secured. The conduct of medical instruction naturally remains with the department of education. The minister of education has also the right to confer the title of professor on practicing physicians on account of scientific attainments, although the medical press has repeatedly and justly protested against this practice.

Operation to Prevent Gangrene of Extremities

Some years ago Professor Wieting of the Gülhane Hospital in Constantinople reported two cases in the *Deutsche medizinische Wochenschrift* in which he had succeeded in preventing a threatened gangrene of the extremities in consequence of arteriosclerosis by transplanting the femoral artery into the femoral vein. Professor Bier recently reported a similar success at a meeting of the Freie Vereinigung der Chirurgen Berlins. In a man of 38, with gangrenous ulcers on one foot, due to arteriosclerosis from tobacco, Bier performed Wieting's operation in place of the amputation which the patient desired. The immediate success of the operation was very remarkable. The intense pains disappeared and the limb, which had been in some places pale, in others blue and cold, became red and warm and the ulcers dried up. As the report was made only twelve days after the operation, the permanent results are doubtful. However, according to Bier's opinion it may be hoped that, even if amputation should become necessary, the improved nutrition of the leg would permit a lower amputation. Professor Payr reported a similar case in the Greifswald Medical Society. After transplanting the deep femoral artery into the femoral vein in a man of 70 with arteriosclerotic gangrene of the great toe and heel of one leg, the leg remained better nourished for eleven days, but after that the circulation failed and the patient died from heart failure after a few days. This case was unfavorable on account of the severe infection already present. In discussing the prognosis of such operations in threatened arteriosclerotic gangrene and in general in threatened obstruction to the arterial circulation, Payr recommended to choose the deep femoral, as at its point of origin its lumen is nearly the same as that of the femoral artery, and this leaves the arterial circulation in the femoral intact, while in case the femoral artery is used, thrombosis occurring at the point of suture cuts off at one stroke the blood supply to the entire limb. Severe infection is a contraindication. Venous thrombi present in the inflamed territory would lodge in the peripheral vessels and cause a complete obstruction of the already imperfect circulation. The return of the arterial blood may be successfully carried on through anastomoses of the deep with the subcutaneous veins. According to anatomical and experimental investigation so far made the valves form no objection to the operation.

New Electric Aid to Hearing

At one of the last sessions of the Berlin Otologic Society Dr. Flatau reported investigations which he had made at the Charité ear clinic with apparatus in which the microtelephonic system is applied. In a certain number of cases, in which all other aids to hearing were unsuccessful, success could still be obtained with this system. But in other cases even this apparatus failed because of the inconstancy of its action and of faulty selection. Flatau therefore had new models constructed in which the tuning of the microphone has been tested for a year and the microphone is installed in a specially arranged and peculiarly constructed sound receiver which possesses various arrangements for regulation. Five types are constructed which differ in the arrangement and size of the acoustic aids in the microphone. In the following discussion it was asserted by all that they had had no favorable results from the microphone apparatus so far in use. Although, as is well known, many people who are hard of hearing can hear well through the telephone, the electric hearing apparatus generally gives no better results than an ear tube. It is generally agreed that a functional examination of the patient must be made before the use of such an apparatus. Further trials of Flatau's instrument will show whether it is more effective than the electric apparatus heretofore in use.

VIENNA LETTER

(From Our Regular Correspondent)

VIENNA, Aug. 8, 1910.

Glanders in the Austrian Army

The Austrian army was expected to hold its annual maneuvers as usual in the month of August, but for some time rumors have been afloat that, owing to some disease in the stables, the actual time of the maneuvers was rather uncertain. Meanwhile a serious outbreak of glanders was conceded by the authorities, and although all the extensive preparations pertaining to the housing and boarding of over 130,000 men and 10,000 horses for three weeks were finished, at the very last moment the maneuvers had to be postponed indefinitely; they will not take place this year. This is due to the action of military medical men, whose influence and opinion in these matters had enough weight to overthrow the optimistic view of purely military persons. The disease had been imported, as could be ascertained by the very close investigation, only seven weeks before, and had at first appeared very insidiously, not having been recognized at once. Only after a few soldiers too had become affected was suspicion aroused, and soon bacteriologic evidence was present.

The course of the disease was mild at first but later all the horses attacked succumbed to the disease, and later on all the affected horses were killed. No less than thirteen regiments are suffering from it, and although official data are not given—all things pertaining to military service are guarded here with secrecy—yet the fact that the maneuvers had to be abandoned, although the emperor himself was to have viewed them, allows one to judge the extent of the epidemic. Up till now, with very few exceptions, no human cases in the present outbreak have been dealt with in the experiment laboratories. Every precaution has been taken to prevent the spread of the epidemic to rural households and farms, and to date no cases have been reported from non-military sources.

Ehrlich's Preparation in Austrian Hospitals

Professor Ehrlich's much spoken of preparation "606" is now in use all over the continent and much comment and perhaps too optimistic expectations are attached to it. The lay press in this country has made very commendable efforts to warn the public of the necessity of waiting further effects of the famous remedy. Just in time a report from the dermatologic clinic in Prague was published, in which it was stated that very unpleasant symptoms (blindness, loss of patellar reflexes, severe pain, etc.), similar to those from acute poisoning with methyl alcohol, have been observed after the injection; though the report was somewhat modified afterward, still it had the beneficial effect of restraining somewhat

the enthusiastic expectation of the multitude of syphilities. On the other hand many favorable reports have been already published by competent observers in the clinics in Vienna, Budapest, Innsbruck and Graz. As is only natural, all their reports emphasize the necessity of watching the patients thus treated for a prolonged period. But the tendency in this country is in favor of this new remedy. It is estimated that the yearly expenditure of the state for the consequences of syphilis in this country, treatment of acute manifestations in the hospitals, as well as of recurrences, housing of the tabetic, the insane and their offspring is at least $6,000,000, without counting the loss of national property due to the same source. The interest with which further developments are awaited can thus be readily understood.

Decrease of Meat Consumption

The report of the superintendent of the general market, who has control also over all the other markets in this country, shows, that in 1909 a marked decrease of the consumption of meat was the leading feature of the meat markets. Thus the average meat consumption per year at Vienna has grown from 64 kilos (130 pounds) for each adult in 1899 to 74 kilos (152 pounds) in 1908; in 1909 the figure was 72 kilos, a decrease of 4 pounds. The growth of meat consumption had been very steady and constant. The sudden drop is explained by the difficulty in obtaining the necessary quantity in the face of the increased expenditure for the other absolutely necessary articles of food, which have become so much dearer. In fact, living having become dearer in this country by 40 per cent., especially since 1908, the effects on public health of the existing conditions have been a matter of serious consideration of the responsible government. The deterioration of the quality and quantity of food consumed by the majority of the population has as yet no marked effect on the vital statistics, but unless it is speedily remedied, serious consequences are sure to follow, for the vegetarian diet is also too dear for the laborer, and abstinence from meat alone is not possible or satisfactory.

Marriages

NORRIS S. MCDOWELL, M.D., to Miss Mathilde J. McCrystal, both of Philadelphia, August 6.

MARTIN P. SUMMERS, M.D., to Miss Elizabeth Humphreys, both of Cushing, Iowa, July 29.

S. J. NEWTON MAGWOOD, M.D., to Miss Maude McLain, both of Toronto, Ont., July 23.

HOMER G. ROSENBERGER, M.D., Whittier, Cal., to Miss Fay West of Oskaloosa, Iowa, July 14.

WILLIAM CANTINE GILLEY, M.D., to Miss Marg... Jenkins, both of New York City, August 11.

Deaths

Walter Keeler Scofield, M.D. College of Physicians and Surgeons, New York City, 1868; a member of the American Medical Association; and Association of Military surgeons of the United States; of Stamford, Conn.; medical director with rank of rear admiral, U. S. Navy, retired April 28, 1901 after thirteen years sea service and eighteen years and eleven months shore or other duty; who entered the naval service in July, 1861, as assistant surgeon; was commissioned surgeon, June 19, 1866; was commissioned medical director in 1889; and was retired on October 8, 1901; died at his home in Stamford, August 5, aged 71.

Benjamin Herning Detwiler, M.D. University of Pennsylvania, Department of Medicine, 1855; a member of the American Medical Association; one of the founders of the Williamsport, Pa., Hospital, and a member of the medical and surgical staff from its foundation; a trustee of the Danville State Hospital, and at one time president of the board; died at his home in Williamsport, August 9, from paralysis, aged 78.

Frank Stillman Raymond, M.D. Louisville, (Ky.) Medical College, 1875; a member of the American Medical Association; formerly president of the Shelby County (Tenn.) Board of Health and president of the Memphis Board of Health; member of the State Board of Medical Examiners; died at his home in Memphis Tenn., August 16, from Hodgkin's disease, aged 57.

Robert A. Jamieson, M.D. University of Pennsylvania, Department of Medicine, 1866; a member of the American Medical Association; emeritus professor of materia medica and clinical medicine in the Detroit College of Medicine; a member of the medical staff of Harper's, St. Mary's and St. Luke's Hospitals, Detroit; died in that city, August 9, aged 66.

Eric A. Davidson, M.D. Bennett College of Eclectic Medicine and Surgery, Chicago, 1898; Rush Medical College, Chicago, 1901; a member of the Illinois State Medical Society; professor of medicine in Bennett College of Eclectic Medicine and Surgery, Chicago; died at the home of his brother in Berkeley, Cal., July 30, aged 51.

Alexander Thompson Bull, M.D. New York University Medical College, New York City, 1848; a member of the Medical Society of the State of New York; died at his home in Buffalo, August 15, from the effects of injuries received by a fall a few weeks before, aged 83.

Wiley W. Tarter, M.D. College of Physicians and Surgeons, Baltimore, 1908; of Mellen, Wis.; died at St. Joseph's Hospital, Ashland, Wis., August 11, from injuries received by the explosion of a barrel of alcohol at Mellen the day before, aged 27.

Mann Page, M.D. University of Virginia, Department of Medicine, 1897; house surgeon and physician to Orange Memorial Hospital, Orange, N. J., died suddenly at his home in Keswick, near Cobham, Va., July 29, from dysentery, aged 40.

Eugene T. Wilhelm, M.D. Jefferson Medical College, Philadelphia, 1878; a member of the Medical Society of the State of Pennsylvania; and Lehigh Valley Medical Association; died at South Bethlehem, June 24, from diabetes, aged 61.

David William Rees, M.D. California Eclectic Medical College, Los Angeles, 1890; for many years a druggist and physician of Needles, Cal.; died at the California Hospital in Los Angeles, July 31, from septicemia, aged 41.

Seymour J. Holley, M.D. College of Physicians and Surgeons, New York City, 1857; a veteran of the Civil war; for twelve years an inspector on the Brooklyn Board of Health; died at the Brooklyn Hospital, August 7, aged 73.

James W. Nance, M.D. Baltimore University School of Medicine, 1894; a member of the Medical Association of the State of Alabama; died suddenly at his home in Russellville, August 5, from heart disease, aged about 55.

George Charles McIntyre, M.D. University of Toronto, Faculty of Medicine, Toronto, Ont., 1906; of St. Mary's, Ont.; died at the Royal Victoria Hospital, Montreal, Que., March 6, from tuberculous spondylitis, aged 28.

William J. Foley, M.D. Louisville (Ky.) Medical College, 1897; a member of the Kentucky State Medical Association; health officer of Fayette county; died at Lexington, August 7, from paralysis, aged 36.

William Henry Hull, M.D. Harvard Medical School, Boston, 1865; a member of the Massachusetts Medical Society; a veteran of the Civil War; of Holbrook, Mass.; died at Essex, Mass., August 8, aged 78.

Edmund Livingstone Moodie, M.D. Hahnemann Medical College, 1903; a member of the American Medical Association; of Chatham, Ohio, died at Harper Hospital, Detroit, July 8, from sepsis, aged 35.

Oliver J. Mayne, M.D. Denver (Colo.) College of Medicine, 1890; a member of the American Medical Association; formerly mayor of Como, Colo.; died at St. Luke's Hospital, Denver, August 9, aged 47.

Francis Emory Ross, M.D. College of Physicians and Surgeons, New York City, 1870; a member of the Missouri State Medical Association; died at his home in Springfield, August 8, aged 72.

George Herbert Huntington Redding, M.D. Bellevue Hospital Medical College, New York City, 1887; died at his home in San Francisco, Cal., August 8, from cirrhosis of the liver, aged 52.

Samuel B. Bailey, M.D. Eclectic Medical College of Pennsylvania, Philadelphia, 1859; a retired practitioner of Higganum, Conn., died at his home in that place, August 11, aged 84.

Samuel H. Griffin, M.D. Missouri Medical College, St. Louis, 1890; a member of the American Medical Association; died at Humansville, Mo., April 7, from pneumonia, aged 61.

William Francis Lynch, M.D. Cooper Medical College, San Francisco, 1882; a member of the Medical Society of the State of California; died at Hayward, Cal., July 1, aged 55.

Samuel B. Littlepage, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1885; a retired practitioner of California; died at a hospital in Oakland, August 11, aged 72.

Levi Spencer Wilcox, M.D. Long Island College Hospital, Brooklyn, N. Y., 1873; twice mayor of Champaign, Ill.; died at the California Hospital, Los Angeles, August 5, aged 63.

James Robert Crockett, M.D. University of Maryland, School of Medicine, 1891; of Burkes Garden, Va.; died at the University Hospital, Baltimore, August 2, aged 54.

John Wesley Klein, M.D. Hahnemann Medical College, Philadelphia, 1871; died suddenly at his home in Louisville, Ky., August 13, from cerebral hemorrhage, aged 59.

Martin Luther Fittro, M.D. University of Maryland, School of Medicince, 1896; died at his home in New Martinsville, W. Va., August 12, from uremia, aged 45.

James H. Scarborough, M.D. Medical Department of the University of Nashville, Tenn., 1872; died at his home in Tharpe, Tenn., August 9, aged 72.

Thomas R. Young, M.D. Jefferson Medical College, Philadelphia, 1859; died at his home in Ashland, Ky., August 2, from senile debility, aged 77.

William C. Baylor, M.D. Washington University School of Medicine, Baltimore, 1869; died at Willow, Cal., June 27, from cerebral hemorrhage, aged 67.

Mark C. Ott, M.D. University of Alabama Medical Department, 1900; died at his home in Greensboro, Ala., July 2, from tuberculosis, aged 34.

Alexander G. Carroll, M.D. Georgia College of Eclectic Medicine and Surgery, 1894; died at his home in Atlanta, Ga., August 7, aged 53.

Randolph S. Steensen, M.D. University of the South, Medical Department, Sewanee, Tenn., 1900; died at Harrisburg, S. D., August 9, aged 38.

William Ross, M.D. Eclectic Medical Institute, Cincinnati, Ohio, 1845; died at Wilton Junction, Iowa, August 1, from heart disease, aged 82.

Charles E. Fay, M.D. Detroit Medical College, 1877; died at his home in Kalamazoo, Mich., August 3, from disease of the liver, aged 56.

Henry T. McNatt, (license, Ark., 1903); formerly of Buena Vista, Ark.; died at his home in Stephens, Ark., August 9, aged 37.

George Alfred Rogers, M.D. St. Louis Medical College —; died at White Lake, S. D., April 18, from nephritis, aged 60.

Henry G. Groff, M.D. Philadelphia Medical College, 1853; died at Harleysville, Pa., July 28, from uremia, aged 80.

J. N. Houston, (License, Tenn., 1889); died at his home near Parsons, Tenn., August 6, aged 84.

Good Pamphlets on Tuberculosis.—Public Health Bulletins 35 and 36 are authoritative monographs on the subject of the nature, prevention and climatic treatment of tuberculosis, which will be serviceable for the information of the physician himself or to place in the hands of patients. They are written by Passed Assistant Surgeon F. C. Smith, of the U. S. Public Health and Marine-Hospital Service. Bulletin 35 gives in plain language the ascertained facts regarding the nature, contagious character, mode of spread and practicable means of prevention of the disease. Useful hints and advice to patients are appended. The information in this pamphlet will not be new to physicians but is given in an excellent form for the instruction of the general public. The second pamphlet is more especially designed for the guidance of the physician in selecting a suitable climate and in deciding whether climatic change is desirable. The opinion of a number of experts is quoted and the different circumstances affecting the decision of the medical adviser are carefully pointed out, it being especially emphasized that the decision must be made with reference to the special circumstance of the individual case. A list is given of the most healthful and suitable places in the different states as shown by the location of state sanatoria, also a list of places characterized by high altitude and dryness and a list of places at more moderate or low altitudes which are suitable for climatic treatment.

Correspondence

Patenting Instruments and Apparatus

To the Editor: A word by way of protest against the patenting of newly devised surgical instruments and apparatus by physicians. It has long been held that any improvement in the armamentarium of the physician should be given to the profession for the benefit of the sick and afflicted. For a physician to patent a method of laboratory technic or apparatus whose purpose is to aid in the diagnosis or prevention of disease is no worse from an ethical standpoint than the patenting of a surgical instrument.

The argument that the physician should profit in this way from his ingenuity and knowledge is fallacious. Otherwise the most laudable efforts of present-day medicine, the prevention of disease, should have no legitimate place in the physician's work.

A most glaring example of this evil has been the recent exploitation of a set of instruments for perforating the skull, which have been patented. They have been widely advertised under the name of the inventor, a doctor, both by the medical press and by circular letter. The claim made for them that it is impossible to injure the underlying dura or brain is not true, as I have demonstrated to my satisfaction. The price, $50, is four or five times their intrinsic value. For $2.40 I have obtained a set of perforating instruments at a local hardware store which answer every purpose—and they are just as safe.

JOHN D. SINGLEY, Pittsburg, Pa.

Registration of Foreign Physicians

To the Editor:—Having read the letters of Drs. Hoenes and McReynolds in THE JOURNAL on this subject, I beg leave to make a few remarks. By way of criticism I will add that there was an air of sentiment about them that interested me. If candidates for license to practice medicine in Canada will comply with the various provincial laws, they will have no difficulty. Of course, if one has, up to a few years ago, carried the hod and later, by way of recreation, obtained a degree or license to practice medicine either by serving apprenticeship for a year as office boy to some poorly trained practitioner, or attending one, two, or even three, five or six-month courses at some diploma mill, one will be blocked at the start. I am surrounded by physicians who have spent, at most, two six-month terms at college, hardly enough time to digest a part of one of the primary subjects of medicine. Did these latter, in the obscurity of the barnyard, obtain a knowledge of anatomy (comparative or human) or did they get their knowledge by inspiration? I have met them at different state board examinations, and later heard of their having passed successfully; all I can say is that they would not have been qualified to take a professional examination in Canada. In conclusion, permit me to say that if a physician has the qualifications which are exacted of all nationalities in Canada, he can obtain the license to practice there.

D. NATHAN, Norristown, Pa.

Doctors of Public Health

To the Editor:—Apropos of the editorial in THE JOURNAL, August 20 on this subject, may I not ask your attention to the course which since 1906 has been offered by the University of Pennsylvania, and which is outlined in the special advertisement of this school in the same number of THE JOURNAL? Dr. Harold Wood, who graduated this spring in this course, has very recently been placed in charge of the Mississippi State Laboratory by the Board of Health of Mississippi.

ALLEN J. SMITH, Dean.

Miscellany

The Mesocelic Recess in Man and its Relation to Reissner's Fiber.—Reissner's fiber, a small bundle commencing in numerous fibrils from the ependymal groove of the lower vertebrates and passing downward or backward through the iter, the fourth ventricle and the central canal of the cord to its posterior extremity, has been traced as a constant structure in the vertebrates from the lamprey up to the monkey. Its function has been supposed to be nervous, but this has not been demonstrated; and Horsley has found that it does not degenerate like a nerve with electrolytic lesions. Dendy has recently (*Nature*, Dec. 23, 1909) suggested that it has a mechanical function in regulating flexure of the body. It seems to be highly elastic and normally under considerable tension during life, as it is found retracted and twisted up after section of the cord. In a recent communication to the Royal Society (June 2, reported in *Nature*, June 9), Professor Dendy and G. E. Nichols report the finding of a rudimentary structure in the human brain corresponding to the ependymal groove, or as they prefer to call it, the subcommissural organ, from which this fiber starts. In the human fetus it consists of two bands of highly columnar epithelium with deeply situated nuclei, invaginated posteriorly into the roof of the iter to form a "mesocelic recess" as in certain lower vertebrates. In the adult brain this is represented by a small cavity lined with characteristic columnar epithelium imbedded in the roof of the iter at the back of the posterior commissure, and in close relation to another cavity, apparently representing a communication with the lumen of the iter. In the fetus this communication is widely open. It is not probable, they say, that any trace of Reissner's fiber will be found in the human adult, as with the loss of the tail and assumption of the erect position, the function it is assumed by them it would have, of automatic regulation of the flexure of the body, is no longer needed, and is represented only by the vestigial remnant of the subcommissural organ.

Paraffinomas.—This term has been coined by Delangre to describe the inflammatory lesions and tumefaction liable to develop around a deposit of paraffin injected into the subcutaneous cellular tissue. The "beauty specialists" have taken up this method of improving the appearance of their customers and serious results have sometimes followed. In one such case presented at a recent meeting of the Paris Dermatologic Society, Thibierge presented a young woman who had been given by a local beauty specialist a number of injections of hard paraffin to remedy a very slight depression in the nose. The immediate results were so satisfactory that she had her face all gone over in this way, 80 injections being made in the course of 21 months. A year later the various deposits became the seat of disfiguring swelling, the aspect suggesting pronounced leontiasis. There is no pain except from the stretching of the skin. Operative removal of the paraffin seems to be the only resource in this case, electrolysis, heat and massage offering little prospect of success with the hard paraffin. Gaucher reported a case in which the paraffinomas had developed in the breast of a young woman and they were followed by cancer. Pautrier also reported 4 cases of paraffinomas in the face, the work of a "beauty specialist;" in one case the lesions ulcerated. He found that each deposit of paraffin was walled in with connective tissue. Balzer called attention to the frequent development of subcutaneous fibromas in the tuberculous after injection of paraffin with a low melting point. Injection of paraffin into a cavity, to replace a testicle, for instance, seems harmless, but the anatomic conditions in the subcutaneous tissue are very different and the results are liable to be deplorable.

Concussion of the Brain.—E. Schwarz discusses a number of cases of trauma causing concussion of the brain, his article appearing in the *St. Petersburg med. Wchnschr.*, 1910, xxxv, 267. His experience shows that an apparently slight accident may induce a focal injury of the brain which yet causes no symptoms and the patient feels no ill effects. The focal lesion may be revealed, however, by blood in the cerebrospinal fluid or a serous effusion may follow if the focus does not heal soon, the cerebrospinal fluid then showing increased pressure or other changes. Lymphocytosis may reveal the changes resulting from the focal lesion. With rest, healing is soon complete, but the necessity for rest from the first should be emphasized even though the patient may feel entirely well. Without rest the pathologic condition may persist and the clinical picture of meningitis be presented in time. The euphoria may be pronounced after lumbar puncture; the latter is especially valuable in these cases. The euphoria is in marked contrast to the condition in cases of traumatic neuroses.

Idiosyncrasies.—R. M. Beauchant concludes an article on this subject in the *Progrès Médical*, April 16, 1910, with the statement that the different idiosyncrasies should be considered as having a common etiology and clinical kinship. Certain families are especially subject to them, although they may appear in various forms in the same person and in the same family. They are generally associated with symptoms which should be regarded as of the same pathogenic importance; these include urticaria, acute edema of the skin or mucosa, asthma, all of which generally accompany the idiosyncrasies; with, more rarely, stenosis, migraine, eczema, pruritus, dysmenorrhea and certain forms of chronic rheumatism and, invariably, with an extreme tendency to nervousness. He thinks that a common soil is evident in all these manifestations, a tendency to instability on the part of the vasomotor apparatus, an angioneurotic diathesis, and that certain features indicate a thyroid origin for the various disturbances noticed with this diathesis.

Congenital Scoliosis.—A case of congenital scoliosis is reported by Frederick Langmead, (*Proc. Roy Med. Soc.*, May, 1910), in an infant aged 10 months, who was brought to the hospital for "projection of the back." There was a pronounced spinal curvature with the convexity to the left, most severe in the dorsolumbar region. In the upper dorsal and lower cervical region was a compensating curve in the opposite direction. The curvature was irreducible. Rickets could be excluded. A skiagram revealed an extra bone between the last dorsal and first lumbar vertebra, wedge-shaped, with the base of the wedge to the left. The bone bore two transverse processes at its base and one at its apex, and thus apparently represented a vertebra and a half. That the twelfth dorsal vertebra was not included in this bone is shown by the fact that twelve ribs could be counted on each side, the lowest of which joined the vertebra above. There were five lumbar vertebræ plainly visible below.

The Diagnosis of Cholera in the Philippines.—Erroneous diagnoses have been responsible for the failure to destroy foci of cholera infection in the city of Manila, according to Victor G. Heiser, Director of Health (*Quarterly Report of the Bureau of Health, Fourth Quarter*, 1909). In the last quarter of 1908, 129 cases of meningitis were reported to the health authorities. In order to verify the diagnosis in a number of these cases autopsies were made, and these showed that the cause of death was cholera and not meningitis. In view of this, it was decided to hold autopsies in all cases reported as meningitis. This had the effect of increasing the diagnostic acumen of those signing death certificates and in the subsequent quarter only 34 cases of meningitis were reported. Twenty-eight of these were autopsied, and only 2 proved to be meningitis; 17 were cholera; 4 were beri-beri; 1 was empyema and 4 were undetermined. In the last quarter of 1909 there were 151 deaths from cholera in Manila. The total death-rate in Manila for 1909 was 35.50 per 1,000, as against 47.62 per 1,000 in 1908.

Carcinoma in Early Life.—Howard T. Karsner (*Proc. Path. Soc., Philadelphia*, February, 1910) reports a series of ten cases of carcinoma, seven occurring, respectively, at the ages of 7, 10, 11, 14, 19, 21 and 22, and three at the age of 23. Five were in males and five in females. The duration of all the cases had been short, confirming the opinion of other observers that cancer runs a much more rapid course in childhood and early life than in adult life. From Karsner's experience and from a study of the literature in early life the sexes seem to show equal predisposition to cancer, the intestine and skin being especially subject to cancer in boys, and the ovaries in girls.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

RESTRICTION OF USE OF RED CROSS—SUBSTITUTES THEREFOR

To the Editor:—Can you give me information about the restriction of the use of the red cross? Would the green cross be a proper insignium to be put on physician's automobiles in order to secure from the police exemption from the speed ordinance in emergency cases? LOUIS F. ROSS, Richmond, Ind.

ANSWER:—The Geneva Convention in 1864, and later in 1906, adopted an international agreement providing that the "emblem of a red cross on a white ground and the words 'Red Cross,' or 'Geneva Cross' should be adopted by all nations participating in the convention as a special designation in times of peace or war to protect or to designate sanitary formations and establishments, the personnel and material protected by the convention." The American National Red Cross, which comes under the regulations of the International Geneva Treaty, was granted a charter by Congress, Jan. 5, 1905, authorizing it to act in behalf of the United States in matters of relief under the treaty. The executive committee of the American National Red Cross then requested all hospitals, health departments and like institutions to refrain from the use of the red cross in order to avoid confusion and suggested as a substitute some other insignia such as a green St. Andrew's cross on a white ground. Congress at its last session restricted the use of the red cross to the American National Red Cross. This law, of course, only prohibited organizations from adopting this emblem after the passage of the law. Although the American Medical Association has used this badge for many years and does not come under the provisions of the law, it was felt by many that the use of the Geneva red cross should be restricted to the American National Red Cross. Consequently, at the Atlantic City Session in 1909 a committee was appointed to submit designs for new insignia. The report of this committee was presented at St. Louis (See THE JOURNAL, June 18, 1910, pages 2068 and 2081). The green St. Andrew's cross on a white ground would be a proper badge for physicians' automobiles, hospital ambulances, etc., and could be adopted by agreement with authorities.

The Public Service

Medical Department, U. S. Army

Changes for the week ended August 20, 1910.

Canaday, George H., dent. surg., August 9, granted leave of absence for twenty days, to take effect about August 10, 1910.

Cole, Clarence L., capt., August 8, designated for duty with troops from Whipple Barracks, Arizona, Camp Atascadero, California.

Rutherford, H. H., major, August 13, ordered to Fort Totten, N. Y., for duty.

Ford, Joseph H.; Van Dusen, James W., majors, August 13, report en route to Camp of Instruction at Fort Riley, Kansas.

Fletcher, John P., lieut., August 13, left Fort D. A. Russell, Wyoming, for duty at Camp E. S. Otis, Wyoming.

Holmberg, Carl E., lieut.; Kremers, Edward D., lieut.; Hathaway, Levy M., capt.; King, Charles T., lieut., August 10, ordered to Camp of Instruction at Atascadero, California, for duty.

Nelson, Kent, capt., Aug. 15, 1910, on arrival at San Francisco will proceed to Whipple Barracks, Arizona, for duty.

Carpenter, Alden, dent. surg., August 15, returned to West Point, N. Y., from leave of absence.

Farrow, Edgar J., M. R. C., August 15, now at Vancouver Barracks, Washington, having completed the duty assigned him, will proceed to Fort Morgan, Alabama, for duty at that post.

Leslie, Samuel H., dent. surg., August 15, ordered to proceed from his home, Monticello, Kansas, to Fort Leavenworth, Kansas, for duty at that post.

Yemans, Herbert W., M. R. C., August 15, having reported in this city in compliance with orders heretofore issued, is designated as the representative of the War Department at the International Esperanto Congress.

Shaw, Henry A., major, August 15, relieved from duty at Fort Slocum, N. Y., September 1, and will proceed to Boston, for duty as attending surgeon. Major Shaw is relieved from duty at Boston, and will proceed at the proper time to San Francisco, and take transport to sail from that place about Dec. 5, 1910, for duty in the Philippines Division.

Jenkins, F. E., M. R. C., and Fuller, Major Leigh A., August 13, report arrival at Camp of Instruction, Fort Riley, Kansas.

Keller, William L., capt., August 14, left West Point, N. Y., on detached service, accompanying the First Class, Corps of Cadets, to Fort Hancock, N. Y.

Bell, Leonard P., M. R. C., August 16, reports for duty at Camp of Instruction, Fort Riley, Kansas.

Cullem, Charles W., M. R. C., August 16, granted leave of absence for two months, to take effect upon his arrival in the United States.

Brechemin, Louis, col., August 16, granted leave of absence for four months, with permission to go beyond the sea.

Church, James R., major, August 16, granted leave of absence for one month, to take effect upon his relief from duty at Fort Robinson, Nebraska.

Nichols, Henry J., capt., August 16, on arrival at New York City, will proceed to Peoria, Illinois, for the purpose of studying pellagra in connection with the commission organized by the governor of Illinois.

Brechemin, Louis, Jr., capt., August 16, leave of absence extended one month.

Le Wald, Leon T., capt., August 17, leave of absence extended one month.

Medical Corps, U. S. Navy

Changes for the week ended Aug. 13, 1910.

Lumsden, G. P., medical inspector, detached from the recruiting station, Chattanooga, Tenn., and directed to wait orders.

Tolfree, H. M., passed asst.-surgeon, detached from the naval recruiting station, Cleveland, Ohio, and ordered to the naval recruiting station, Chattanooga, Tenn.

Orders issued by Commander-in-Chief of Asiatic Fleet:

Ames, M. H., passed asst.-surgeon, ordered to duty at the naval hospital, Olongapo, P. I.

Higgins, S. L., passed asst.-surgeon, detached from *Mohican* and ordered to the *New York*.

Dollard, H. L., asst.-surgeon, detached from the *Relief* and ordered to the *Charleston*.

Guest, M. S., surgeon, ordered to the navy yard, Pensacola, Fla., when discharged from treatment at the naval hospital, Las Animas, Colo.

Fitts, H. B., medical inspector, detached from the navy yard, Pensacola, Fla., and ordered to Washington, D. C., for examination for retirement.

Tolfree, H. M., surgeon, commissioned surgeon from March 24, 1910.

Allen, A. H., passed asst.-surgeon, detached from duty with the naval rifle team of 1910 and ordered to duty at the naval hospital, navy yard, New York, N. Y.

Higgins, S. L., passed asst.-surgeon, commissioned passed assistant surgeon from November 12, 1909.

State Boards of Registration

COMING EXAMINATIONS

IOWA: Capitol Building, Des Moines, September 12-14. Sec., Dr. Guilford H. Sumner, State House.

MASSACHUSETTS: State House, Boston, September 13-15. Sec., Dr. Edwin B. Harvey.

MISSOURI: Capitol Building, Jefferson City, September 20-22. Sec., Dr. Frank B. Hiller.

NEW YORK: Albany, September 27-30. Chief of Examinations Division, Dr. Charles F. Wheelock.

Arkansas Homeopathic May Report

Dr. P. C. Williams, secretary of the Arkansas Homeopathic Board of Examiners, reports the written examination held at Texarkana, May 18, 1910. The number of subjects examined in was 12; total number of questions asked, 120; percentage required to pass, 75. The 8 candidates all passed.

College	PASSED Year Grad.	Per Cent.
Kansas City Hahnemann Medical College	(1910)	
77.5, 79, 79, 80, 80.5, 81		83, 83

Arizona July Report

Dr. Ancil Martin, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, July 5-6, 1910. The number of subjects examined in was 9; total number of question asked, 90; percentage required to pass, 75. The total number of candidates examined was 11 of whom 6 passed and 5 failed. The following colleges were represented:

College.	PASSED Year Grad.	Per Cent.
University of Alabama	(1910)	78.3
University of Southern California	(1910)	80.5
Georgetown University	(1906)	78.4
Northwestern University Medical School	(1907)	81.1
St. Louis University	(1909)	87.5
Memphis Hospital Medical College	(1901)	79.2
FAILED		
College of Physicians and Surgeons, Chicago	(1904)	70.3
Hospital College of Medicine, Louisville	(1897)	66.5, 70.9
Medical College of South Carolina	(1910)	67.8, 67.9

Colorado July Report

Dr. S. D. Van Meter, secretary of the Colorado State Board of Medical Examiners, reports the written and oral examination held at Denver, July 5, 1910. The number of subjects examined in was 8; total number of questions asked, 80; percentage required to pass, 75. Twenty-five candidates were examined of whom 21 passed and 4 failed. Twenty-seven candidates were registered on presentation of satisfactory credentials, including state licenses. The following colleges were represented:

PASSED

College.	Year Grad.	Per Cent.
Denver and Gross College of Medicine ..... (1906) 77.7; (1910) 79.7, 80.5, 81.3, 83, 83.3, 84.7, 88.7		
University of Colorado ..... (1909) 81.5, 81.7; (1910) 79.6, 83.4, 83.4, 83.6, 83.8		
Bennett Medical College, Chicago	(1910)	82.4
Rush Medical College	(1898) 79.4;	76.7
Hering Medical College, Chicago	(1910)	77.9
Harvard Medical School	(1910)	86.2, 86.7

FAILED

University of Louisville	(1905)	68
St. Louis College of Physicians and Surgeons	(1906)	63.2
Ensworth Medical College	(1908)	53.7
Barnes Medical College	(1906)	65

REGISTERED ON CREDENTIALS

College.	Year Grad.	State Licenses.
Georgetown University	(1908)	Pennsylvania
Bennett Medical College	(1898)	Texas
American Medical Missionary College	(1909)	Michigan
College of Physicians and Surgeons, Chicago	(1899)	Illinois
Jenner Medical College	(1901)	Iowa
Rush Medical College	(1898)	Iowa
University of Iowa, College of Medicine	(1907)	Nebraska
University of Iowa, Homeopathic College	(1896)	Iowa
University of Kansas	(1906)	Kansas
Maryland Medical College	(1905)	West Virginia
St. Louis Medical College	(1867)	Missouri
Washington University, St. Louis	(1904)	Illinois
Northwestern Medical College, St. Joseph	(1892)	Missouri
St. Louis University	(1908)	Missouri
University of Buffalo	(1898)	New York
Columbia University, College of Physicians and Surgeons	(1895)	New York
New York University Medical College	(1867)	Pennsylvania
Eclectic Medical Institute, Cincinnati	(1872)	Pennsylvania
University of Pennsylvania	(1892)	Pennsylvania
Western Pennsylvania Medical College ..... (1888) (1896)	(1901)	Pennsylvania
Medico-Chirurgical College, Philadelphia	(1892)	Pennsylvania
University of Toronto, Ontario	(1882)	California
Queen's University, Canada	(1898)	Minnesota
University of Vienna, Austria	(1894)	Montana

Connecticut July Report

Dr. Charles A. Tuttle, secretary of the Connecticut Medical Examining Board, reports the written examination held at New Haven, July 12-13, 1910. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 35 of whom 27 passed and 8 failed. The following colleges were represented:

PASSED

College.	Year Grad.	Per Cent.
Yale Medical School ..... (1908) 84.7; (1910) 80, 81.1, 82.4, 84.3		
Georgetown University	(1908)	84.3
Baltimore Medical College ..... (1910) 76, 79.4, 81.2, 81.4		
College of Physicians and Surgeons, Baltimore	(1910)	78.9, 81.2
Johns Hopkins University	(1910)	76.9, 78.7
Tufts College Medical School	(1908)	83.9
Harvard Medical School ..... (1909) 80.4;	(1910)	81.7
College of Physicians and Surgeons, Boston	(1910)	78.6
Columbia University, College of Physicians and Surgeons ..... (1905) 83;	(1910)	78.2
University and Bellevue Hospital Medical College	(1909)	82.8
Long Island College Hospital	(1908)	75.8
University of North Carolina	(1908)	79.4
Jefferson Medical College ..... (1908) 83.1;	(1910)	82
University of Vermont ..... (1897) 75.7;	(1910)	81.2

FAILED

College of Physicians and Surgeons, Chicago	(1899)	68.5
College of Physicians and Surgeons, Baltimore	(1903)	64.5
College of Physicians and Surgeons, Boston	(1910)	60.1
Maryland Medical College	(1910)	68.8, 74
Baltimore Medical College	(1909)	71.6, 74.2
University of Vermont	(1899)	57.7

Connecticut Homeopathic July Report

Dr. Edwin C. M. Hall, secretary of the Connecticut Homeopathic Medical Examining Board, reports the written examination held at New Haven, July 12-13, 1910. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 5, of whom 3 passed and 2 were conditioned. The following colleges were represented:

PASSED

College.	Year Grad.	Per Cent.
Atlantic Medical College, Baltimore	(1909)	78.5
Hahnemann Medical College and Hospital, Philadelphia	(1910)	80.8, 94.1

FAILED

Boston University	(1905)	*78
Hahnemann Medical College and Hospital, Philadelphia	(1910)	*76

* Conditioned in one or two branches.

Book Notices

INTRODUCTION TO THE ANALYSIS OF DRUGS AND MEDICINES. An Elementary Handbook for the Beginner. By Burt E. Nelson, Chemist to the New York State Hospitals. First Edition. Cloth. Price, $3 net. Pp. 384, with 31 illustrations. New York: John Wiley & Sons, 1910.

In view of the extremely diversified nature of the substances entering into the composition of medicines, the separation and determination of the several ingredients of a medicinal preparation is often a matter of great difficulty and is occasionally impossible. Since a glimpse into nearly every phase of chemical activity is necessary in order to cope successfully with all of the problems met with in drug analysis, a comprehensive work devoted to the subject is a much-sought desideratum. Because of the magnitude of the task no one has hitherto attempted the preparation of such a treatise, but the "Introduction to the Analysis of Drugs and Medicines" apparently is a step in this direction, although this work, as the title implies, is little more than an outline of the subject. At the outset of the book the term "drug" is limited by definition to "a dried plant part in the crude state." In the early chapters attention is called to the apparatus and operations used in the ultimate analysis of inorganic and organic substances and the outlines of the principal methods used in elementary qualitative and quantitative analysis are given. A chapter is devoted to the determination of molecular weights, common radicles and chemical formulæ. The general principles of drug analysis, by means of which the proximate principles of drugs may be separated and identified, are given in some detail. While not so comprehensive as the section devoted to microscopic drug analysis (in which field the author is more at home) this is in some respects the most valuable portion of the book.

The analytical scheme outlined is an eclectic adaptation of the earlier schemes described by Dragendorff, Parsons and other writers. While it is clear, concise and usable, its chief value is in calling the attention of the beginner to the principal factors to be kept in mind and the results to be expected in drug analysis, leaving the details to be obtained from the teacher or from specialized works of reference. Brief sections are devoted to the assays of chemicals, crude drugs and pharmaceutic preparations and a short chapter is alloted to pharmacologic methods. Many valuable tables are given in the appendix. As no diagnostic methods are given, the book can have no place in the curriculum of the medical school nor in the working library of the physician. It should prove useful in those schools giving elementary courses in drug analysis, and particularly in those in which but little time can be given to foundation courses in analytic chemistry.

THE PRODUCTION AND HANDLING OF CLEAN MILK. Including Practical Milk Inspection. By Rencim Winslow, M.D., M.D.V., B.A.S. (Harv.), Chairman of the Committee on Milk of the Washington State Medical Association. And Essentials of Milk Bacteriology. By H. W. Hill, M.D., Minnesota State Board of Health Laboratories. Cloth. Price, $3.25. Pp. 367, with 101 illustrations. New York: W. R. Jenkins Co., 1910.

An attempt is made in this book to treat the bacteriology, chemistry, physiology of milk, also the practical points of caring for cows, construction of stables, handling of milk, milk transportation, and the inspection of milk and dairies. In addition, the bacteriologic examination is discussed, with a chapter devoted to the identification of bacteria usually found

in milk and the preparation for culture media. Finally a series of laboratory experiments is outlined for the practice of students, by Prof. H. W. Conn. All these subjects cover a rather large field and could be treated more successfully in single books each devoted to one subject specially. If the author had confined himself to the practical parts of milk production and the handling of milk the value of the book would have been enhanced.

The first chapter deals with germs in their general relation to milk. Aside from the fact that many misstatements, contradictions, inaccuracies and some typographic errors have crept in, it must be confessed that the composition is not always clear and leaves doubt in the mind of the reader of the position actually taken by the author. For instance, after discussion of pasteurization, parts of which are useless repetitions, it remains problematic whether the author is in favor of pasteurization or not. To mention some of the inaccuracies: It is stated that bacteria multiply by spores. This is difficult to conceive in view of the fact that a bacterium, as far as we know, never produces more than one spore. The discussion on the germicidal action of fresh milk is premature, since investigators are by no means agreed on the subject. The same comment applies also to the presence of "natural ferments" in milk.

Chapters 2 to 8 are devoted to practical questions of the production, handling and transportation of milk; also the care of cows, the food and the construction of stables. These chapters are of great merit, although occasionally not quite clear and consistent, and they might have constituted the most profitable nucleus for a book of this nature. The chapter on the housing and care of cows is perhaps the most valuable in the book. Milk inspection is discussed in Chapter 9. The presentation of this subject is fair and complete on the whole.

Chapters 10 and 13, on the bacteriology of milk, are written by Dr. H. W. Hill. Justice to this large subject cannot be expected in a limited space, but the information given is fair and clear, although somewhat from a onesided point of view. Chapter 14 contains instructions for laboratory work. As stated before, this belongs properly in a special work and really has no place in this book.

In the appendix we find illustrations of modern sanitary cow-stables. Unfortunately, the most approved modern swinging stanchion is omitted, and the statements in regard to milking machines are rather premature.

ENTÉRO-CÔLITE: ESTOMAC ET SYSTÈME NERVEUX. Par le docteur L. Fron, Membre adhérent de la Société de médecine de Paris. Paper. Price, 2 francs. Pp. 132. Paris: Jules Rousset, 1, Rue Casimir-Delavigne, 1910.

The author sustains the proposition that the condition commonly known as membranous colitis or colitis mucosa is closely connected with nervous dyspepsia and with enteroptosis. He regards the intestinal condition as directly dependent on the failure of the stomach to perform its functions, and therefore directs his therapeutic measures to the cure of the fundamental affection. He attributes the influence of the stomach in producing the pathologic condition of the intestine to the irritation of the solar plexus which is set up by abnormal gastric conditions, is transmitted to the intestinal plexus, and thus causes the intestinal symptoms. The chapter on therapeutics includes a consideration of the dietetic and physical measures suitable to the cure of the dyspepsia as well as to the medicinal treatment. The importance of psychotherapy is recognized. The treatment appears to be in accordance with the methods usually followed in the treatment of these affections. The emphasis which the author puts on the connection of intestinal symptoms with a gastric disorder which is sometimes unrecognized is suggestive and gives to the book its *raison d'être*.

ARBEITEN AUS DEM PHARMAZEUTISCHEN INSTITUT DER UNIVERSITÄT BERLIN. Von H. Thoms, M.D., Professor und Direktor des Pharmazeutischen Institutes der Universität Berlin. Volume VII. Comprising work of 1909. Paper. Price, 7 marks. Pp. 312, with illustrations. Vienna: Urban & Schwarzenberg, 1910.

The present volume follows much the same lines as the previous ones. We note with regret the statement in the preface that Dr. Zernik has left the service of the institute. He is succeeded in these investigations by Dr. E. Richter. Much of the report is taken up with the investigation of some comparatively rare plants, especially some of the essential oils. A large section is given to the investigation of foodstuffs from the German colonies. Notwithstanding the great importance of the investigations reported, it is to be regretted that so much of the material is of no immediate practical value to the physician.

DIE PRAXIS DER HYDROTHERAPIE UND VERWANDTER HEILMETHODEN. Ein Lehrbuch für Aerzte und Studierende. Von Dr. A. Laqueur, leitendem Arzt der hydrotherapeutischen Anstalt und des mediko-mechanischen Institutes am stadtischen Rudolf-Virchow-Krankenhause zu Berlin. Price, 8 marks. Paper. Pp. 288, with 57 illustrations. Berlin: Julius Springer, 1910.

This book reflects the present teaching of hydrotherapy in Germany and Austria, where the practice of this important branch of therapeutics has reached a high degree. The first chapter takes up the physiologic action of hydrotherapy and thermotherapy and includes a good description of the "reaction." Other chapters deal with the influence on the blood, the secretions, the nervous system and the musculature. This is followed by section on the general technic and the application of hydrotherapeutic measures in various diseases. Electric baths, including the "four-cell bath" and electric light treatment, are well illustrated.

Medicolegal

Skill and Care Required of Specialists, Particularly Hernia Specialists—Liability for Bad Results—New and Unaccepted Methods of Treatment—Paraffin Treatment of Hernia

The St. Louis Court of Appeals says, in the malpractice case of McClarin vs. Grenzfelder (126 S. W. R., 817), that, as treatment for hernia, the defendant, on January 6, injected into the plaintiff's right groin over the hernia some aseptic paraffin. The theory of the practice was that this paraffin, after it was injected into the middle of the muscle outside the abdominal cavity and the peritoneum, would form into a compact mass over the hernia, and close, and hold closed, the orifice in the peritoneum so the bowel could no longer protrude, or possibly hold the bowel in place until the orifice had contracted enough to prevent protrusion. But, notwithstanding the plaintiff was pronounced cured, he said that he suffered pain from that time until May 7, when he was taken to a hospital, found to be suffering from peritonitis, and was immediately operated on therefor.

Taken in its entirety, the testimony of the one expert introduced by the plaintiff pointed rather weakly to the conclusion that the paraffin in the abdominal cavity caused the peritonitis. Doubt, however, was cast on this theory by the paraffin not being in contact with the peritoneum, and the complete cure of the peritonitis before the paraffin was removed. Moreover, the injection of it, if a regular and approved method of treating the ailment, would not necessarily lay the defendant liable, even if it induced the peritonitis, for untoward results sometimes follow the most scientific surgery. On the whole, more evidence on the main issues of fact was desirable; but, as there was proof that the peritonitis might have been caused by the wax, and some evidence tending to prove the injection of it was not a right way to treat hernia, the court indorses the submission of the case to the jury, which returned a verdict in the plaintiff's favor for $2,000 damages. At the same time, the judgment is reversed, and the cause remanded for another trial, on account of erroneous instructions given the jury.

The theory carried through the instructions was that the defendant was only required to possess and exercise the skill and care exercised by physicians of ordinary skill and ability in localities like St. Louis, whereas this court thinks he was bound to exercise the care of a specialist, and that the propriety of his treatment was to be determined with reference to the practice and approval of specialists. It might be that the system was recognized, approved, and used by physicians who had kept pace with scientific progress in

relieving hernia, but "was a method or manner of treatment not used by physicians and surgeons of ordinary care and skill," as the instruction read.

Because the defendant held himself out as an expert in the treatment of hernia, the law required him to treat the plaintiff with the skill and care commonly shown by physicians and surgeons in St. Louis and cities in advance or abreast of it in the practice of medicine and surgery, who devote special study to the treatment of the disease; that is to say, the proficiency and skill of hernia specialists, not meaning by this designation only physicians who treat that disease exclusively, but also those who by special study and experience probably have acquired more accurate knowledge of the right methods of treatment than is possessed by general practitioners of medicine. And in ascertaining whether the requisite skill and care were employed in a given case, contemporary knowledge of the ailment and how to relieve it are considered.

If expert practitioners of the defendant's school concurred in opinion about the right method of treating hernia, and the defendant adopted a method not recognized as sound, then, according to courts which have passed on the question, his conduct should be regarded as an experiment which rendered him liable if it injured the plaintiff in the way alleged; that is, caused peritonitis. But if the defendant's system of treatment was recognized as proper, then, though there were other systems recognized as proper, he could not be convicted of negligence if he made use of the one he deemed most suitable for the plaintiff's case. In such a condition of medical science the question of the defendant's responsibility would turn on whether he administered the remedy preferred by him with the degree of care and skill required of a person holding himself out as an expert.

What the court is dubious about is whether the evidence for the defendant conduced to prove the treatment he used was recognized by experts of his school (the allopathic or regular school) as proper for the relief of hernia. That it was of comparatively recent origin ought not, by that fact alone, to put it in the class of innovating experiments, so as to lay the defendant liable for a bad result, even though he displayed reasonable skill and care in the manner of applying it. This is true because some of the most approved systems of treatment, like antitoxin for diphtheria, met with general acceptance by the medical profession a few years after their discovery.

Importance to Public Health of Pure Milk and Validity of Law Fixing Standard

The Supreme Judicial Court of Massachusetts says, in Commonwealth vs. Wheeler (91 N. E. R., 415), that milk is a very important article of food, which enters largely into the sustenance and development of children. It is the natural food of infants for a considerable time after their birth, and the milk of the cow is often used to supply the deficiency of milk from the mother. Probably there is no other article of diet the purity and good quality of which are so important to the life and health of the people, and especially to the life and health of the young children, as are the purity and good quality of milk. It is also very easy to adulterate it, and it may be adulterated, especially by the addition of water, in such a way that nothing but a chemical analysis will detect the adulteration.

The legislature, in the interest of public health, has enacted laws intended to enable the people to obtain milk of good quality, that is free from adulteration. No one can question the proprietary of legislation on this subject. If statutes are directed to this end, the methods adopted for accomplishing the object desired, so long as they have some manifest relation to the object, must be left to legislative determination. Not only in Massachusetts, but in several other states, the establishment of a standard founded on the quantity of milk solids and of fat contained in the milk has been adopted as the best way of preventing adulteration, and of securing for purchasers milk whose quality can be relied on. It is a familiar exercise of the police power for the prevention of fraud and promotion of the public health.

That the defendants did not know that the milk they had for sale contained less than the prescribed quantity of milk solids, or but 11.65 per cent. when 12.15 per cent. of milk solids were required by the statute, was immaterial. It has often been decided that, in the public interest, the burden of ascertaining at his peril, whether an article that he sells is within the prohibition of a criminal statute, may be put on the seller.

The defendants offered evidence that the milk in their possession was not deleterious or injurious to health, but was nutritious and beneficial as an article of food. This, if proved, would not have shown that the law requiring milk sold or for sale to contain at least 12.15 per cent. of milk solids and not less than 3.35 per cent. of fat was invalid. The fact that a certain kind of milk is not injurious to health, and that it is somewhat nutritious and beneficial, as an article of food, if used discreetly, with full knowledge of its qualities and deficiencies, is not enough to deprive the legislature of its power to forbid the sale of it, if it would be likely to be used to commit frauds on purchasers who might buy and use it, relying on its supposed possession of a larger proportion of nutritious qualities, and if such use of it would be likely greatly to injure the public health, and particularly the health of young children. The legislature might believe that the authorized sale of such milk would open so wide a door to the commission of frauds on the community, and would be so injurious in its consequences, that such sales should be prohibited.

The offer to prove that the milk was without adulteration, and just as it came from properly fed cows in sound health, was governed by the same considerations.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

Boston Medical and Surgical Journal

August 4

1 Laboratory Work of the Danvers State Hospital, Hathorne, Mass., with Special Reference to the Policy Formulated by Dr. Charles Page, Superintendent, 1888-1898, 1903-1910. E. E. Southard, Boston.
2 *Margin of Error in the Diagnosis of Mental Disease. E. E. Southard, Boston.
3 *The Dementia Præcox Group in the Light of Certain Cases Showing Anomalies or Sclerosis in Particular Brain Region. E. E. Southard, Boston.
4 *Ten Obscure Cases of Mental Disease. L. T. Alford, Hathorne, Mass.
5 Study of the Senile Spinal Cord. A. S. Hamilton, Minneapolis.
6 *Histologic Study of the Thyroid Gland in Mental Disease: Especially Chronic Thyroiditis. A. H. Peabody, Hathorne, Mass.
7 *Incidence of Heart Diseases in Acute Psychoses. A. A. Horner, Hathorne.
8 *Bacterial Invasion of the Blood and the Cerebrospinal Fluid by Way of the Mesenteric Lymph Nodes. E. E. Southard and M. M. Canavan, Hathorne, Mass.
9 Bacillary Dysentery at the Danvers State Hospital. M. M. Canavan, Hathorne.
10 Persistence of Agglutinins of *B. Dysenteriæ*. M. M. Canavan, Hathorne.
11 Organisms Recovered from Dysentery Cases. M. M. Canavan, Hathorne, Mass.
12 Mannite and Non-Mannite Fermenting Organisms in Dysentery, Complicated by Hemorrhagic Endometritis. M. M. Canavan, Hathorne.
13 Primary Adrenal Tuberculosis in Juvenile General Paresis with Meningeal Infection (*B. Coli Communis*). E. T. F. Richards, Hathorne.
14 *Autochthonous Sinus Thrombosis. F. B. Sims, Hathorne, Mass.
15 *Diagnosis of Fractured Skull Aided by the Finding of Brain Tissue in the Vomitus. G. T. Brown, Hathorne, Mass.
16 Brain and Other Visceral Weights in 66 Subjects Showing Carcinoma and Sarcoma. N. B. Burns, Hathorne, Mass.
17 Effects of Over-Feeding with Fats in Certain Cases of Insanity. H. M. Adler, Hathorne, Mass.

August 11

18 Clinical Aspects of Arteriosclerosis. H. Jackson, Boston.
19 Diagnosis of Infantile Paralysis in the Prodromal and Early Acute Stage as Found in the Experimental Study of Acute Poliomyelitis in Monkeys. E. P. Lucas, Boston.
20 Milk Pasteurization in Boston. M. J. Rosenau, Boston.
21 The Condition Dominated External and Internal Atony: Its Association with Tuberculosis. A. M. Forbes, Montreal.

2. **Mental Disease.**—The majority of the real diagnostic difficulties uncovered by Southard's analysis would appear

to require more intensive work in the field of clinical pathology. For such work in psychopathic hospitals this paper is an appeal.

3. **Dementia Præcox.**—The topographic study of dementia præcox brains, both gross and microscopic, is commended as likely to shed new light on the pathogenesis of certain symptoms, notably paranoidal and katatonic symptoms.

4. **Mental Disease.**—In these 10 cases the diagnoses made from the morphologic findings were changed in 2 cases after comparison with the clinical histories. One was due to the fact that the psychosis, a delirium, resulted from a functional stomach disorder that could not be recognized post-mortem; the other was a case in which the brain of a patient with dementia præcox had undergone certain senile changes. Of the clinical diagnoses, on comparing with the morphologic, one was corrected, and 2 left unclassified were in a measure cleared up. Counting the unclassified as errors, there were 3 errors in the clinical diagnoses of these 10 cases. Of these, one was due to the poor histories and inability to communicate with the patient; one was probably due to the fact that the patient died the same day that he was admitted; and one error was made because enough importance was not assigned to the disturbance of bodily functions as a causative factor in mental disease. Errors are liable to occur, then, in both the morphologic and clinical diagnoses of a case, but when the 2 are compared it is believed that fairly accurate conclusions may be reached.

6. **Thyroid Gland in Mental Disease.**—Fifty patients were examined. Excluding a case of exophthalmic goiter and one of acromegaly, about 77 per cent. of the Danvers' series show changes. A possible relation between the thyroid gland and the process of emaciation is seen in the fact that 64 per cent. of the subjects with "normal" thyroids (11) had become emaciated under hospital or other conditions, whereas none of the individuals with chronic thyroiditis (12) showed emaciation. Again, only 13 per cent. of the subjects showing follicular or interstitial excess of colloid had become emaciated, so that the question arises whether such histologic "excess" means excess or means defect in thyroid constituents in the body at large.

Though the pulse had not been intensively studied clinically in these cases, certain data are available. None of the "normal" thyroids had been associated with pulse-rates over 100 (75 per cent. under 90). Only 1 of 7 cases of marked chronic thyroiditis yielded a pulse over 90 (but that one over 120). The exophthalmic goiter patient naturally had a high pulse; the acromegaly patient a low one. The hyperplastic and excess-colloid cases, as well as those of slight chronic thyroiditis, are variously distributed with respect to pulse. Five descriptions of thyroid glands in dementia præcox are added; 3 of these yielded both microscopic and macroscopic alterations (one enlarged, 2 small), which may or may not signify important alterations in the amount of thyroid products reaching the circulation. Two cases of briefer duration showed neither microscopic nor macroscopic alterations.

7. **Heart Disease in Acute Psychosis.**—This study of the incidence of heart lesions in acute psychoses is based on the protocols of cases autopsied over a period of 30 years. The protocols are unselected, and are those of such autopsied cases as possessed clinical histories permitting the diagnosis of manic-depressive insanity or dementia præcox. This study showed that the percentage of hearts probably normal functionally is higher in manic-depressive insanity than in dementia præcox; dilatation of heart occurs more frequently in manic-depressive insanity than in dementia præcox. Leaving out dilatation of the heart, the incidence of every cardiac lesion in dementia præcox is greater than the incidence of the corresponding lesion in manic-depressive insanity. The incidence of individual heart lesions is relatively greater in the acute psychoses than in all psychoses combined, except that the relative frequency of hypertrophied hearts in manic-depressive insanity is below the average. This study suggests the desirability of a close clinical study of hearts, pulse and blood tension in the group of acute psychoses.

8. **Bacterial Invasion of Blood and Cerebrospinal Fluid.**—The material was unselected, save (1) that cases without readily palpable nodes were not examined; and (2) that 30 of the 50 cases gave macroscopic signs of intestinal disease of greater or less severity (15 from an epidemic of bacillary dysentery). There were no detectable differences in the proportion of bacteria growth at different intervals post-mortem. Positive cultivations were obtained in (a) cerebrospinal fluid, 85 per cent.; (b) blood, 80 per cent., and (c) node, 78 per cent. Growths from all 3 regions were obtained in 55 per cent. Growths from 2 out of 3 regions were most frequently obtained in cerebrospinal fluid and lymph node (17 per cent.). The incidence of various organisms was as follows: Cocci in the blood, 26 cases; in the cerebrospinal fluid, 22; and in the lymph node, 16; *staphylococcus aureus* in these sources, 5, 6 and 3 cases, respectively; streptococci, 2, 1 and 0 cases; bacilli in 1, 8 and 10 cases in the respective sources. The findings seem consistent with the hypothesis that in the terminal exhaustions of the insane bacterial invasions are almost the rule.

14. **Autochthonous Sinus Thrombosis.**—Sims presents a study of a case of extensive sinus thrombosis of the cerebral sinuses. It is of interest because of the extent of the thrombus and the slowness of its development; also because of the probable origin in a focus of sclerotic vessels in one of the lateral sinuses. A rugged, healthy man of 49, with history of frequent severe headaches for a year, had an attack of sudden onset, with violent headache and vomiting lasting over 12 hours. Periods of somnolence, aphasia and increasing weakness of the right side followed, with temperature chiefly subnormal. Later hallucinations, delirium, hemiplegia, deepening stupor and coma appeared, with death at the end of 6 weeks. The case was clinically doubtful. The most likely diagnoses made in life were brain tumor, apoplexy and meningitis. The true diagnosis of sinus thrombosis was not seriously thought of by any of the physicians dealing with the case in life. The symptom most characteristic of sinus thrombosis was missing, i. e., congestion of the veins of the cranium and face.

15. **Fractured Skull.**—This case illustrates a curiosity in the diagnosis of skull fracture, based on the finding of brain material in the gastric contents. A car conductor sustained a fracture of the skull from collision with a telegraph post while on the running board of his car. Two hours after the accident, the patient showed an obvious depressed fracture of the right frontal bone, and while on the accident table began to vomit bloody fluid. The vomiting was extensive (1 to 6 oz.) and lasted 8 hours. At the third or fourth attack of vomiting, a bit of material was observed on the blanket which macroscopically suggested fresh brain tissue. This suggestion was later microscopically confirmed. The patient died 65 hours after the accident. He spoke no words while in the hospital, but was restless, spontaneously arising from bed, was without paralysis and would resist attempts at examination (such as gagging of mouth or lifting of eyelids) by incoordinate movements of arms and legs. On gagging he uttered long, loud, ah sounds. Later he groaned, habitually breathed through the mouth and a few hours before death became cyanotic. There was no systematic examination of reflexes. The knee-jerks were neither markedly decreased nor increased. The pupils were moderately and equally dilated.

Medical Record, New York

August 13

22 *The Value of Surgical Procedures in the Solution of the Problem of Race Betterment. J. E. Mears, Philadelphia.
23 Tetanus and Its Treatment. C. D. Fox, Philadelphia.
24 Electric Sleep in Paths of Displacement Currents: New Findings. L. G. Robinovitch, New York.
25 Important Events in the Development of Gastroenterology. J. Friedenwald, Baltimore.
26 Why the Exceptional Child is Entitled to Receive Training Suited to Its Needs at Public Expense. M. Neustaedter, New York.
27 Alcoholic Gastritis and Its Relation to Experimental Gastritis in Animals. N. B. Foster, New York.
28 Primary Streptococcus Diphtheria. D. H. Orgel, New York.
29 *Aerotherapy. J. G. Sauer, New York.

22. **The Problem of Race Betterment.**—Mears believes that we should endeavor to secure, not only sterilization, but also removal of the sexual desire. He advocates for this purpose

the operation of ligation of the spermatic cord, which sterilizes and removes sexual power and desire after a period of a few months. The operation of resection of the vas deferens sterilizes, but leaves sexual desire, and this both injures the defective individual and causes him to continue in his bad practices.

29. **Aerotherapy.**—Sauer proposes that we shall sleep in beds that are so arranged that the head projects out of the window in all weathers. This induces good sleep and good health. To secure this he removes the legs of the head of the bed to the middle of the side frames, so that the head may be pushed out of the window, and the window shut on to the lower portion of the body, the upper part projecting out of the window; it should be well protected by a hood and warm bedding in winter.

New York Medical Journal

August 13

30 Resection of the Elbow in Children. C. G. Cumston, Boston.
31 Visual Fields in Accessory Sinus Disease. S. M. MacWhinnie, Seattle, Wash.
32 *Uterine Fibromyoma Complicating Pregnancy. R. S. Hill, Montgomery, Ala.
33 Acute Inversion of the Uterus. J. A. McGillan, Philadelphia.
34 *Singultis Gastricus Nervosus. A. Bassler, New York.
35 Clinical Significance of Depression. G. E. Price, Philadelphia.
36 Tropical Diseases Observed in the Region of San Francisco Bay. C. Wellman, Oakland, Cal.
37 *Innocently Acquired Syphilis. W. B. Brouner, New York.

32. Abstracted in THE JOURNAL, May 28, 1910, p. 1817.

34. **Singultis Gastricus Nervosus.**—As a condition, Bassler says, this is rarely encountered (seen by him in only two cases of several thousand neurotic stomach conditions), and most probably usually in well-nourished young adults and most often in the female. The close study of these two cases in the way of heredity, past history, cause, imitation, syphilis, hemorrhages, infectious diseases, chemical toxic causes (lead, alcohol, tobacco), and the usual symptoms of hysteria were not present, and both of them had a *bona fide* gastric hyperesthesia accompanying them. The most careful examination in both failed to elicit any skin anesthesia, hyperesthesia, or paresthesia, had pain, emotional crises, were mentally excitable or depressed or had loss of emotional control, were impulsive, had spinal or vertical pains, globus hystericus, vasomotor disturbances, disturbed sleep, somnambulism, or cerebral automatism, paralysis, contractures, tremor, ataxic or choreic movements, absence of skin reflexes, complete loss of concentric limitation of the visual field or disturbance of color sense, manifested the presence of hysterogenic zones, pseudoangina, amyosthenia, constipation, and other of the less common clinical symptoms observed in the more or less irregular course of hysteria. Both the patients were exhaustively examined by competent specialists, among whom were neurologists, ophthalmologists, gynecologists, and others, and both were considered as normal in all other respects, and Bassler therefore believes that such a neurotic condition of the stomach does occur, the cause of which is primarily situated in that organ, and that this gives rise to involuntary contractions of the diaphragm as a reflex manifestation.

37. **Syphilis of the Innocent.**—A number of cases are cited by Brouner in support of his contention that syphilis, one of the most contagious infections afflicting mankind, is undoubtedly on the increase as judged by hospital and private practice, and that many estimable, respectable people acquire this disease innocently, and for a long time are unaware of the real nature of their illness. These innocent victims innocently infect others, and the most frequent source of infection is by using public drinking cups, public towels in bathrooms and improperly washed cooking utensils, etc. Brouner would prohibit the practice of passing around drinking water in public places of amusement because of the danger of infection that lurks in them. Hospitals, dispensaries and public buildings, he declares, should not be provided with public drinking cups, but with individual paper cups. The public should also be instructed as to what to demand from their dentists in the way of aseptic instruments. It is too common a practice for dentists not to pay any attention to the advances made in knowledge of asepsis.

Northwestern Lancet, Minneapolis

August 1

38 *Diagnosis and Treatment of Epidemic Cerebrospinal Meningitis with Flexner's Antimeningitis Serum. S. M. White, Minneapolis.
39 Abdominal Pain: Its Clinical Significance. G. Eusterman, Rochester, Minn.

38. **Flexner's Antimeningitis Serum.**—From a limited experience with the use of Flexner's serum, White concludes that it may be difficult or impossible to find Gram-negative intracellular cocci in the exudate in certain cases of infection with *Diplococcus intracellularis meningitidis*. This is especially true in a severe, almost fulminant, type, and this experience has been reported by other observers. In the presence of positive symptoms of meningitis and with the absence of an etiologic factor, such as pneumonia, endocarditis, or injury, and when the fluid removed is cloudy, giving positive evidence that a meningitis exists, White says the serum should be used as though the presence of *Diplococcus intracellularis meningitidis* was proved, until such time as cultures or other evidence reveals the nature of the infection. It is advisable to adopt this attitude only when one has had experience with meningitis, sufficient to make him sure of his ground, and it is only the occasional case in which one will need to wait for the results of culture before making a positive diagnosis. Additional encouragement to the use of the serum in a case where one must wait for the results of culture before making certain diagnosis is afforded by marked improvement in the condition of the cerebrospinal fluid.

Virginia Medical Semi-Monthly, Richmond

July 22

40 Rectal Carcinoma—Digital Examination. G. B. Justice, Marion, N. C.
41 Practical Eye and Ear Points of Interest to the Practitioner. C. P. Jones, Newport News, Va.
42 Crotalin Injections Through the Thoracic Walls as a Means of Treating Pulmonary Cavities. T. J. Mays, Philadelphia.
43 Cretinism, Juvenile and Adult Myxedema; Exophthalmic and Simple Goiter. H. E. Jones, Roanoke, Va.
44 Treatment of Enlarged Senile Prostate and Specific Prostatitis and Arteriosclerosis by Electricity. J. C. Walton, Richmond.
45 The Medical Inspection of Schools. J. G. B. Bulloch, Washington, D. C.
46 Refraction by the General Practitioner. M. L. Dalton, Floyd, Va.

Pennsylvania Medical Journal, Athens

July

47 *Restoration of the Upper Eyelid. E. B. Heckel, Pittsburg.
48 *Achondroplasia. M. H. Fussell and H. K. Pancoast, Philadelphia.
49 *Early Diagnosis of Pulmonary Tuberculosis. C. H. Miner, Wilkes-Barre.
50 *Roentgen-Ray Diagnosis of Pulmonary Tuberculosis. C. L. Leonard, Philadelphia.
51 *Tuberculosis of the Lungs without Cough or Expectoration. J. Walsh, Philadelphia.
52 *The General Practitioner and the Incipient Case of Pulmonary Tuberculosis. A. A. Watkins, St. Benedict.
53 *Prognosis in Advanced Tuberculosis. W. B. Stanton, Philadelphia.
54 Treatment of Tuberculosis. A. P. Francine, Philadelphia.
55 *How May Inflammations of the Accessory Sinuses of the Nose Occasion Inflammation of the Orbit and Eyeball. H. E. Hansell, Philadelphia.
56 *The Sphenoid and Ethmoid Sinuses in Their Relation to Eye Diseases. D. B. Kyle, Philadelphia.
57 *Ocular Symptoms Caused by Intranasal Diseases. J. F. Culp, Harrisburg.
58 Differential Diagnosis of Orbital Conditions Caused by Sinusitis, Including Thrombosis of the Cavernous Sinus. W. Reber, Philadelphia.
59 Diagnosis and Treatment of Pleurisy with Effusion. D. Riesman, Philadelphia.
60 Opium Poisoning. J. V. Shoemaker, Philadelphia.

47. **Restoration of the Upper Eyelid.**—Heckel's case was that of a negro who was so burned in a mine explosion in January, 1908, as to destroy completely both upper eyelids. Thiersch or epithelial grafts were used. The right eye was operated on in July, 1908; the left in the following September. The graft for the right eye was taken from the right arm and for the left eye from the left arm. The final results were excellent.

48. A paper on the same subject by Pancoast was abstracted in THE JOURNAL, Oct. 16, 1909, p. 1321.

49 to 53. Abstracted in THE JOURNAL, Oct. 30, 1910, p. 1506.

55, 56, 57. Abstracted in THE JOURNAL, Nov. 6, pp. 1588, 1580.

Southern Medical Journal, Nashville

July

61 **Surgical Aspect of Stone in the Kidney.** J. A. Crisler, Memphis.
62 Tumors of the Bladder. E. M. Sanders, Nashville.
63 Zoologic Aspect of Uncinariasis. W. S. Leathers, University, Miss.
64 Extrauterine Pregnancy. J. H. McNeill, Olive Branch, Miss.
65 Treatment of Retrodisplacements of the Uterus. L. E. Burch, Nashville.
66 Convulsions in an Adult from Copremia. P. Norris, Rutherfordton, N. C.
67 The Toxemias of Pregnancy. G. C. Trawick, Nashville.
68 Sprained Ankle. D. Eve, Nashville.
69 Cure of Tuberculosis by the General Practitioner. D. L. Wilder, Knoxville, Tenn.

Military Surgeon, Washington, D. C.

August

70 The Army Medical Service. V. C. Vaughan, Washington, D. C.
71 Venereal Diseases in the United States Army: Prevention and Treatment. L. M. Maus, U. S. Army.
72 Work of the Board for the Study of Tropical Disease in the Philippines. W. P. Chamberlain, H. D. Bloombergh and E. D. Kilbourne, U. S. Army.
73 Blastomycetic Dermatitis. T. W. Jackson, U. S. Army.
74 Pupil Conditions in Aliens, Their Significance, and Suggestions. E. H. Maulian, U. S. P. H. and M.-H.S.
75 The Farmer Recruit and the Medical Officer of the National Guard—What They Mean to Our Commonwealth. J. C. Minor, U. S. Army.
76 Wassermann Reaction in the Military Service. M. A. Reasoner, U. S. Army.
77 Hysterical Amnesia. H. Butts, U. S. Navy.
78 Creeping Eruption. H. I. Raymond, U. S. Army.
79 Idem. H. R. Gosman, U. S. Army.

Surgery, Gynecology and Obstetrics, Chicago

August

80 *The Question of Metastasis of Carcinoma in the Ovaries and Douglas' Cul-de-Sac. J. Rosenstirn, San Francisco.
81 *The Influence of Trauma in the Production of Diseases of the Pelvic Organs in Women. M. L. Harris, Chicago.
82 Diagnosis of Hyperthyroidism or Exophthalmic Goiter. C. H. Mayo, Rochester, Minn.
83 Non-Parasitic Multilocular Cysts of the Spleen. R. H. Fowler, Brooklyn.
84 *Vaccine Therapy as an Adjunct to Surgery. J. B. Deaver, J. C. DaCosta, D. B. Pfeiffer, Philadelphia.
85 *Further Experimental Data on the Vasomotor Relations of Shock. M. G. Seelig and E. P. Lyon, St. Louis, Mo.
86 Pathology of the Thyroid and Hematology in 100 Goitrous Chicago Dogs. A. Wercelius, Chicago.
87 *The Cammidge Reaction. B. C. Willis, B. F. McGrath, J. T. Pilcher and D. C. Balfour, Philadelphia.
88 *Treatment of Traumatic Injuries of the Lungs and Pleura. G. M. Dorrance, Philadelphia.
89 *Liver Abscess. F. W. Dudley, Manila, P. I.
90 Bone Grafting and Osteoplasty. E. P. Magruder, Washington, D. C.
91 *A Deceptive Form of Appendicitis in Women. H. A. Crossen, St. Louis.
92 *Closing Incisions in the Renal Pelvis. H. A. Kelly, Baltimore.
93 *Operation for Cystocele. W. P. Graves, Boston.
94 Rectal Anesthesia. J. F. Churchill, Chicago.
95 Treatment of Eclampsia by Dilatation or Incision of the Cervix. R. Peterson, Ann Arbor.
96 Use of Oxygen in Treatment of Asphyxia Neonatorum. F. C. Holden, Brooklyn.
97 *A New Uterine Forceps. A. J. Schoenberg, Chicago.

80. Metastasis of Carcinoma in the Ovaries.—An examination of 15 cadavers by Rosenstirn showed that carcinoma in the abdominal cavity may cause an implantation metastasis in the cul-de-sac of Douglas. It occurs earlier than that of the ovaries. It is influenced in its origin by the law of gravity and therefore affects first the deepest part of the pouch. It is not necessary in these cases that the primary carcinoma has perforated into the free abdominal cavity—a sarcoma still entirely covered by serosa can cause implantation by metastasis in the cul-de-sac of Douglas. Rosenstirn emphasizes that it should be recommended in radical operation of carcinoma of the organs in the abdominal cavity to remove the deepest situated part of the Douglas cul-de-sac, i. e., the pouch.

81. Trauma in Production of Pelvic Diseases.—Among the last 1,000 cases of railway accidents that have come under Harris' personal supervision 412 were women, and of this number 77, or 18.7 per cent., claimed injury to the pelvic organs as a direct result of the accident. In 24 patients a miscarriage resulted. The youngest woman was 20 years old, and had already had two children. The oldest was 49 and had also had two children. It is interesting to note that in all but one of the patients, the miscarriage occurred before the fifth month. It is perfectly plain, says Harris, that many of the conditions found, namely, old lacerations, rectoceles, cystoceles, prolapses, old displacements, intraligamentous cysts, pelvic tumor, etc., bore no causal relation to the accidents; on the other hand, it is equally plain that a ruptured extranterine pregnancy, an acute volvulus, a twisted pedicle of the ovarian tumor, a pelvic hematoma, the miscarriages, etc., were the direct result of the accidents. The chief question is whether intrapelvic diseases such as salpingitis, metritis in its various forms, displacements of the ovaries and uterus, etc., can be caused or initiated by such accidents as have been described above.

Of much interest and importance in this connection is the married or single state of the women. Of the 412 women injured, 331 were married and 81 single. Of the 76 women claiming some form of injury to the pelvic organs (eliminating the one who merely injured the vulva by sitting down on her heel) 72 were married and 44 were single, but of these 4, 3 were single in name only, as one was pregnant at the time, two showed unmistakable signs of marital relations, and one of these had an old infection. One only was actually a miss and the only pelvic disturbance she had was a slight irregularity of menstruation for 2 or 3 months. Of the married women 22 per cent. claimed injury to the pelvic organs while of the actually single only 1 per cent. had a temporary disturbance of menstruation. The inferences to be drawn from these facts are, that women with normal, healthy pelvic organs very rarely, indeed, have these organs injured by such accidents as described, while those whose organs have been damaged by the violence of parturition or from the effects of previous infections, may have former symptoms temporarily aggravated or acute exacerbations of an old infection.

84. Abstracted in THE JOURNAL, July 9, 1910, p. 160.

85. Vasomotor Relations of Shock.—Seelig and Lyon's work points, in every instance, against the correctness of the theory that shock is a symptom complex due primarily to vasomotor exhaustion.

87. Abstracted in THE JOURNAL, June 4, 1910, p. 1891.

88. Traumatic Injuries of the Lungs and Pleura.—This is an exhaustive experimental study which cannot be presented in abstract in the limited space at our disposal.

89. Liver Abscess.—Dudley has treated several hundred cases of amebic dysentery since 1899, by both the colonic irrigation treatment and the ipecac method, and has found the latter treatment to be more prompt and sure in its effects. The ipecac treatment he found prompt and efficient. If instituted at an early stage, the patient does not have to be confined to home or hospital for more than 5 or 6 days and the treatment seldom needs to be repeated unless there has been a reinfection. The method of administration of ipecacuanha, with some important modifications, is that described by Manson. A preliminary dose of castor oil and laudanum is given and the patient put on a milk diet. After abstaining for 4 hours from both food and water, 2 grams of ipecac are given, in 6 pills, with just as little water as possible. The patient must lie on the back in bed, in a dark room, and should not be allowed to talk or be in any way molested. No food or liquid should be taken for 8 hours after taking the medicine. After the 8 hours are up the patient may take milk and water liberally until 4 hours before the time for the next dose. Dudley usually has the patient fast from 4 p. m. and gives the pills at 8 p. m. In this way food may be taken during a good part of the day. If the pills are so made that they will pass out of the stomach without dissolving, the preliminary dose of tincture of opium and the mustard plaster to the stomach may be dispensed with without fear of nausea. If at any time nausea should occur, an ice bag about the throat gives most relief. Grams 1.650 are given on the second day; 1.325 on the third; 1.0 on the fourth; 0.650 on the fifth, and 0.325 on the sixth day. The patient is now put on light diet and a 0.325 gm. pill is given for 6 days longer when the cure is usually complete, although in some cases it may be necessary to continue for 12 days.

In this method of administration the making of the pills is a very important matter, Dudley says. The pill mass is best made with the extract of glycyrrhiza. The pills are then coated heavily with salol or enclosed in kreatinized capsules. If kreatinized capsules be not at hand the pill mass may be put in the ordinary gelatin capsules and the space between cover and body of the capsule sealed with a little liquid gelatin. The capsules are then placed in a Petri dish and a few drops of formalin are put in a dish so as not to touch the capsules. The cover is then placed on and allowed to remain for about 8 hours. The capsules should be exposed to the air for 6 or 8 hours before use as otherwise they will prove irritating to the stomach. This method of treatment has proved of value in the catarrhal, bacillary, amebic and balantidium forms of dysentery and in diarrhea.

91. Abstracted in THE JOURNAL, Jan. 22, 1910, p. 315.

92. **Closing Incisions in Renal Pelvis.**—For some years past Kelly has been in the habit of utilizing, in closing the renal pelvis, the lamella of Gerota's fascia (fatty capsule) which spreads out over the posterior surface of the kidney as well as its pelvis. The tissue of the pelvis *per se* affords no satisfactory secure hold for sutures closing an incision made, say, in extracting a calculus, but when this fibrous capsule is caught and sutured as an additional layer overlying the pelvis proper the whole is bound securely together and such a wound rarely leaks. Another valuable use of this fascial layer is in plication of the hydronephrotic pelvis. It is here the firm hold for the needle is secured in passing from the margin of the kidney where the fascia is unusually strong down toward the ureter and back again to the margin in the form of the letter V.

93. **Operation for Cystocele.**—The operation described by Graves aims to reduce the two component parts of the cystocele in such a manner as to restore the anterior wall to its natural contour and to eliminate all irregularities and protrusions which may impinge on a snugly repaired perineum. The operation as it is now performed by Graves, is somewhat less complicated than formerly described, but the essential principle is the same.

97. **A New Uterine Forceps.**—The uterine forceps devised by Schoenberg is to be used for the purpose of operating on the tubes, ovaries or round ligaments. The jaws are covered with rubber tubing.

Louisville Monthly Journal of Medicine and Surgery

August

98 Therapeutic Value of Calcium Lactate. J. J. Moren, Louisville.

Archives of Ophthalmology, New York

July

99 The Ocular Manifestations Associated with Acne Rosacea: Case of So-Called Rosacea Keratitis. T. B. Holloway, Philadelphia.
100 Methyl Alcohol Amblyopia. E. Gruening, New York.
101 Bacteriologic Examination of the Conjunctival Sac Previous to Cataract Extraction. H. S. Gradle, Prague, Germany.
102 Hyalin Degeneration of the Cornea. J. Rubert, Kieff, Germany.
103 The Etiology of Bilateral Congenital Corneal Opacity. R. Seefelder, Leipzic, Germany.
104 Influence of Pregnancy and Labor on Diseases of the Eye. J. Fejer, Budapest.
105 The Pathogenic Element of Trachoma. Dr. Addario, Palermo, Italy.

California State Journal of Medicine, San Francisco

August

106 The Essentials of Surgical Diagnosis in Fractures. T. W. Huntington, San Francisco.
107 *Epidemic Meningitis in California and its Treatment with Flexner's Antimeningitis Serum. P. K. Brown, San Francisco.
108 Treatment of Fractures of the Humerus Through the Musculospiral Groove. R. Brown, Santa Barbara.
109 Theocin Poison. E. Schmoll, San Francisco.
110 Pain as a Symptom in Secondary Syphilis. E. W. Twitchell, Sacramento.
111 *Skin Diseases in the Hawaiian Territory—(Sun a Modifying Factor). H. E. Alderson, San Francisco.
112 Acute and Chronic Prostatitis. V. G. Veckl, San Francisco.
113 Causes and Diagnosis of Prostatic Hypertrophy. M. Krotoszyner, San Francisco.
114 Palliative Treatment of Prostatic Hypertrophy. E. G. McConnell, San Francisco.
115 Operative Treatment of Prostatic Hypertrophy. G. S. Peterkin, Seattle.

107. **Flexner's Antimeningitis Serum in Meningitis.**—To date, the serum has been used in 38 cases, in nearly all of which Brown has seen the patient at least once. There have been 12 deaths, or a mortality of 30 per cent. Of the deaths, 1 occurred in an epidemic where the serum gave out, after decided improvement of the patient from its use; 4 patients were moribund when injected; 1 patient got streptococcus infection of the spinal canal (relapsed case); 1 died of acute diffuse myelitis after 7 injections; 2 patients were treated entirely by other physicians, with meager directions, and no complete data of the result was ever furnished Brown. Two of the 9 occurred in an epidemic on Goat Island, 1 a fulminant case, after a single injection of 2/3 the present dosage; and 1, a recurrent case, 6 weeks after the first attack in which the disease was probably very diffusely spread over the meninges. There have been 2 relapses in the 38 cases, both patients dying. Neither was so promptly treated in the relapse as in the first attack.

111. **Skin Diseases in the Hawaiian Territory.**—Some dermatoses, according to Alderson, are modified not by the heat of the sun, but rather by some other effects of its rays. In the Hawaiian Territory senile keratoses, various other pre-epitheliomatous conditions, basel cell epithelioma and cutaneous neoplasms in general are extremely rare. It cannot be denied that the sun's beneficent rays are a factor here also. In such a uniformly warm climate as that of Honolulu, the skin is naturally more or less hyperemic, and moist most of the time. It is due to this state of affairs that the use of the Roentgen ray demands extreme care and vigilance, for under these circumstances radiodermatitis develops very easily, as was proved in a number of cases in which exposure was not unduly prolonged (as measured by standards elsewhere) and severe burns resulted.

Journal Tennessee State Medical Association, Nashville

July

116 *Enlargement of the Prostate. L. E. Burch, Nashville.
117 *Chronic Prostatitis. G. R. Livermore, Memphis.
118 *Phases of the Diagnosis and Treatment of Prostatic Obstruction. B. Lewis, St. Louis.

116 to 118. Abstracted in THE JOURNAL, April 23, 1910, pp. 1400, 1401.

Woman's Medical Journal, Cincinnati

July

119 Obstetric Complications from a Preventive Point of View. E. V. Davis, Chicago.
120 Essential Paroxysmal Tachycardia. A. Martine, Utica, N. Y.

Western Medical Review, Omaha

August

121 Experimental Work on the Etiology of Poliomyelitis. L. B. Pilsbury, Lincoln, Neb.
122 *Clinical Varieties of Poliomyelitis. H. M. McClanahan, Omaha.
123 *Poliomyelitis in Polk County, Nebraska, During 1909. C. A. Anderson, Stromsburg, Neb.
124 *Fifty Cases of Poliomyelitis. J. C. Malster, Stromsburg, Neb.
125 Acute Poliomyelitis. F. E. Coulter, Omaha.
126 Epilepsy. M. W. Phifer, Wheatland, Wyo.

122. **Varieties of Poliomyelitis.**—In McClanahan's opinion all cases of poliomyelitis may be grouped under five heads, spinal, bulbar, meningeal, polyneuritic and abortive. His experience includes a study of 45 cases; about 15 of the patients he saw during the acute stage in consultation with other physicians, while the others were examined after recovery from the acute symptoms. In all cases he had a good, clear, clinical history, and many of the patients he has had opportunity of seeing a number of times. The ordinary or spinal type is the form of poliomyelitis as described by Charcot. In the bulbar type there is an involvement of the nuclear centers in the medulla oblongata. McClanahan saw 4 cases of this type, all being fatal. In one there was paralysis of the facial nerve and in another, paralysis of the motor nerves of the eye, without the face being involved. By the meningeal type is meant that in which the onset is characterized by meningeal symptoms, fever, pain, often headache, neck rigidity and more or less unconsciousness. Indeed, some of these cases in the beginning are so similar to epidemic cerebrospinal meningitis, that the physician may easily make such a diagnosis. McClanahan saw one case that from the symptoms was typical of meningitis, and but for the presence of poliomyelitis in the vicinity he would have made this

diagnosis. But in that case a lumbar puncture with a clear fluid, and the subsequent history, established the fact that it was not a true meningitis but a meningeal type of poliomyelitis.

In the polyneuritic type of cases there is generally hyperesthesia, with suffering and sometimes intense, agonizing pains, usually in the lower extremities or in the back. McClanahan saw one such case. The pains in the back and extending down the left leg were so intense that for several days it was necessary to keep the child under the influence of opiates. The subsequent history of the case was that the pains gradually subsided with loss of power in the leg and permanent paralysis of the anterior tibial group of muscles. Finally, in all epidemics of poliomyelitis, alongside of the true cases which have developed all the symptoms of paralysis, there are the abortive cases, in which there occur all the symptoms of the onset of the disease, but in which there is no paralysis, the patients being ill but a few days and making a complete recovery. In other words, there is some general infection, but no lasting symptoms. Except in the presence of an epidemic, McClanahan says the diagnosis of the abortive type could not be made, without the occurrence of the disease in other children, in the same household. In that case, if the child had all the symptoms, and recovered in a few days, without paralysis, then such a diagnosis would be justified.

123. **Poliomyelitis.**—From May 30 to July 4, 1909, there occurred in the Stromsburg territory (a place of residence) 30 cases, while from July 4 to August 3, there were 115 cases. The first case that is suspected of being infectious poliomyelitis in Polk County occurred about the middle of May, 1909. The patient was a child 5 or 6 years old who came from some distant part of the state, just after recovering from the acute stage. The first case that Anderson saw occurred 11 miles northwest of Stromsburg on May 30; the patient had been ill for one week and during that time had been under the care of a physician from the nearest town who had made a diagnosis of influenza. Of the 86 patients seen by Anderson, 84 per cent. were less than 10 years old. In 40 families of 150 children, 86, or 57 per cent., contracted the infection. Isolation of the sick was carried out so far as possible and when many were sick in one family infection had usually occurred before medical aid was called.

The number of patients who recovered from the acute symptoms in less than a week was 32. Thirty of these showed no marked paralysis, except that a leg might suddenly give way while walking along, thus causing the little patient to fall oftener than usual. The spine was more or less spastic, especially in the cervical region and the gait commonly stiff and awkward. The remaining 2 were paralyzed as follows: left leg and right arm, recovery almost complete in 5 months; mental symptoms, recovered in 9 months. Seventeen recovered from acute symptoms at the end of a week; 8 had no well-defined paralyses, and 9 were paralyzed. Three have not yet fully recovered; facial paralysis, one leg and back; both legs, subsequent history unknown. Seven recovered from the acute symptoms at the end of 2 weeks, one without paralysis and 6 paralyzed. Two recovered from paralysis as follows: one was affected mentally and recovered in one week; one eyelid paralyzed, recovered in 2 months; two paralyzed in one arm and two in one leg and were not completely recovered for 8 months.

Twelve patients recovered from the acute symptoms at the end of 3 weeks, and all were paralyzed. Six recovered from paralysis as follows: one leg recovered in 7 months; right arm recovered in 6 weeks; diffuse weakness, recovered in one week; both legs and back recovered in 2 months; both legs recovered in 5 months. Six patients have not yet (8 months) fully recovered from their paralysis: Right leg two patients; left leg, one; left leg and trunk, one; left leg, one; one arm and one leg, one. Seven patients recovered from the acute symptoms at the end of 4 weeks, and 3 recovered from the paralysis in 3 months: Both legs, 2 cases; one leg, one. Four have not yet (8 months) recovered from the paralysis: right leg; both arms; both legs and trunk. Of the 82 surviving patients, 48, or 60 per cent., were at first markedly paralyzed, and, of these, 27 have since functionally recovered, while 21 are yet more or less paralyzed, many of whom will need some orthopedic treatment to prevent deformity. Four patients in this series died, all of bulbar paralysis.

The treatment was eliminative and supportive with rest in bed in the lateral position. Cold was applied to the head and counter irritation used along the spine. Hot baths after the fever stage seemed to relieve the intensity of the neuritic pain somewhat. One patient improved remarkably during the night following the fumigation, while inhaling the formaldehyd fumes yet remaining in the bed clothing. The previous day the pain and the muscular contracture of the leg prevented extension of the knee to more than right angle, while the following day it could be extended completely, and even permitted some walking. No especial importance is attached to this, however, as improvements were frequently sudden.

124. **Poliomyelitis.**—Malster treated 54 cases of epidemic poliomyelitis occurring in 40 families. Four of these patients were adults: Children in families, 96; children that had it, 50; families in which all children had it, 21; families of only one child, 10; paralyzed (30.3 per cent.) 16; recovered from paralysis (66 2-3 per cent.) 11; left paralysis (33.3 per cent. or 10 per cent. of all) 5; deaths 1 per cent.; recurrences 2; paralyzed, able to walk (one not old enough) 3; paralyzed before called (these are the only ones that cannot walk) 2. Ages of patients 9 days to 37 years. Of the 50 children, the oldest two were 10 and 12 years, and the remainder under 10 years. Nearly every case could be traced to some other case or to a locality where the children played together. Quarantine checked it and caused fewer in the family to have the disease; and isolation, together with care in not allowing kissing of the sick, eating and drinking after the sick, etc., also helped to check it.

Ophthalmology, Seattle, Wash.

July

127 Suggestion for an Operation for Chronic Glaucoma. R. Deniz. New York.
128 Glaucoma Following Cataract Extraction. B. Chance, Philadelphia.
129 Id. H. G. Goldberg, Philadelphia.
130 Id. S. D. Risley, Philadelphia.
131 Things that Happened to me in my Operative Career. J. H. Claiborne, New York.
132 Treatment of Congenital Argamblyopia. W. L. Phillips, Buffalo.
133 Facts, Old and New, About the Lacrimal Apparatus. E. E. Blauuw, Buffalo.
134 Supra-Orbital Neuralgia. J. I. Dowling, Albany.
135 Trauma of the Eye. R. Kerry, Montreal.
136 Repair of the Cornea. F. H. Koyle, Hornell, N. Y.
137 A Rare Anomaly of the Inferior Central Vein of the Retina. C. A. Bahn, New Orleans.
138 Epibulbar Sarcoma. C. A. Veasy, Spokane, Wash.

Bulletin Lying-in Hospital, New York

March

139 Sternopagus Tetrabrachius. J. W. Markoe, New York.
140 *Normal Human Blood Serum as a Curative Agent in Hemophilia Neonatorum. J. E. Welch, New York.
141 *Peritonitis in Young Infants. C. G. Burdick, New York.
142 *A Modified Obstetric Forceps. G. W. Kosmak, New York.
143 Ichthyosis Congenita. H. J. Schwartz, New York.
144 *The Stomach Contents and Motility in Breast-Fed Infants. H. Heiman, New York.
145 Cerebrospinal Meningitis and General Streptococcemia Complicating Pregnancy: Cesarean Section. A. B. Davis, New York.
146 Five Successive Cesarean Operations on One Patient. A. B. Davis, New York.

140. Published in the *American Journal of Medical Sciences*, June, 1910, and abstracted in THE JOURNAL, July 2, 1910, p. 83.

141. **Peritonitis in Young Infants.**—Two cases of peritonitis in young infants are reported by Burdick. The infection in both cases was probably through the umbilicus, although there was no gross lesion in either instance. In one of the cases it is fair to suppose that erysipelas in the mother was the source of the infection, although there were no cutaneous lesions on the body.

142. **A Modified Obstetric Forceps.**—The particular field in which Kosmak's instrument could be used is limited to that class of cases in which the fetal head is caught at the outlet, where the patient's pains have simply given out and

no further progress of the advancing head is possible. The head may remain in this situation for a considerable time unless it is assisted over the remaining portion of the birth canal by means of forceps. In the instrument described, the hand of the operator comes close to the fetal head which can thus be more readily controlled. As the handles of the instrument are not elevated to the extent which they are in the long-bladed forceps, the points of the blades are not so apt to cut into the perineal floor as the head is being delivered. The Tucker-McLane instrument has been used as the basis of Kosmak's idea. With the exception of being slightly narrower, the size and contour of these blades are the same as in the large forceps, but instead of the usual shank the blades are inserted directly into the handles. The pelvic curve is also slightly less than in the ordinary instrument.

144. **Stomach Contents and Motility of Breast-Fed Infants.**—The stomach was found empty by Heiman at the end of 2 hours in 4 out of 13 cases, and in 5 out of 9 at the end of 3 hours, and in 5 out of 6 at the end of 4 hours. Free hydrochloric acid was present in 2 patients, 7 and 8 months of age, respectively. Pepsin was present in only 6 cases. Rennet was demonstrated in all but 2 cases, lactic acid was present in all but 3 cases. These data differ considerably in many respects from those recorded in previous studies.

American Journal of Urology, New York

July

147 Entire Absence of Right Kidney, Ureter and Blood Vessels. J. N. Vander Veer, Albany.
148 Surgical Aspect of the Abnormally Movable Kidney. O. C. Smith, Hartford, Conn.
149 Bacterin Therapy in Urethral and Prostatic Infections. E. G. Mark, Kansas City, Mo.
150 Anastomosis of the Vas: Time Following Operation Necessary for Successful Issue. G. K. Swinburne, New York City.
151 Hemorrhages from the Male Urethra. A. Ravogli, Cincinnati.

Journal of the Arkansas Medical Society, Little Rock

July

152 The Pharmacologic Action and Therapeutic Uses of Alcohol. C. E. Witt, Little Rock.
153 *Intramuscular Injection of Mercury; Especially the Insoluble Preparations. E. C. Hay, Hot Springs.

153. Abstracted in THE JOURNAL, June 11, 1910, p. 1992.

Maryland Medical Journal, Baltimore

August

154 *The Importance of the Eugenic Movement and its Relation to Social Hygiene. L. F. Barker, Baltimore.
155 The Advantages of Operations for the Cure of Hernia. A. McGlannan, Baltimore.
156 *Care of Epileptics in Separate Institutions. W. T. Shanahan, Sonyea, N. Y.
157 Eclampsia. A. Samuels, Baltimore.

154. **Eugenic Movement.**—This survey of the subject of eugenics is closed by Barker as follows:

Fragmentary as has been this presentation, I trust that it may stimulate thought regarding the eugenic ideal, and hope that the subject will be studied and that the people may become instructed in it. In becoming thorough eugenists, we shall act in accordance with the highest aims and purposes of all persons interested in true social hygiene. Though the old doctrine of predestination gets new support from the recent studies, these studies also teach us how mankind can control its destiny. It will be absolutely necessary to attack the problems of (1) the improvement of races and families, and (2) the extinction of hereditary disease in the one single way in which permanent betterment is possible. We must more consciously control the union of germ-cell qualities, and we can do this by creating new sentiments regarding marriage and parenthood.

156. **Epileptics in Separate Institutions.**—Shanahan urges that the patients should be divided into the voluntary and the legally or judicially committed. Many of those sent to a colony should be kept there indefinitely, both for their own good and for that of the public. The colony authorities should also have power to secure the commitment of those whose mental condition precludes their being able properly to become resident outside of an institution. The patients committed should, as a rule, be kept in the colony during the remaining years of their life. This might be at first, perhaps, looked on as a hardship, but when they learned that the restrictions laid on them were not unduly severe, they and their relatives would, as a rule, cooperate to the best of their ability. The epileptic who is congenitally deficient to a marked degree or the one who is profoundly demented, will not improve as a result of colony treatment. The average epileptic does, however, show some improvement after a residence of several months, and from 3 to 4 per cent. have a complete cessation of seizures. At the Craig Colony 16 patients have been free from seizures for 2 years or longer, and in 14 years, 46 have been discharged as recovered. Shanahan can see no good reason why, if properly planned, a colony cannot be arranged so as to care for all types and classes of epileptics, thus enabling the other institutions for the abnormal to carry out their work to better advantage.

St. Louis Medical Review

July

158 Rupture of the Intestine from Abdominal Traumatism. H. P. Kuhn, Kansas City.
159 Drugs that Increase Oxidation. G. F. Butler, Chicago.
160 A Plea for Statistics on Paretic Dementia in Railway Employes. F. Fry, St. Louis.
161 Sphere of Ophthalmology Incumbent on the Practitioner. M. Weiner, St. Louis.
162 Surgical Treatment of Bone Tuberculosis in the Adult. A. E. Horwitz, St. Louis.

Journal South Carolina Medical Association, Charleston

June

163 *Epidemic of Beriberi. A. J. Jervey, Charleston.
164 Beriberi. F. W. P. Butler, Columbia.
165 Appendicostomy. H. R. Black, Spartanburg.
166 *Pulmonary Tuberculosis. L. B. Morse, Hendersonville.

163, 166. Abstracted in THE JOURNAL, May 28, 1910, pp. 1815, 1816.

Yale Medical Journal, New Haven, Conn.

June

167 *Defectives and Degenerates: A Menace to the Community. J. M. Keniston, Middletown, Conn.
168 *Fresh Animal Serum in the Treatment of Hemorrhage. C. T. Beach, Hartford, Conn.
169 Features of Nasal Surgery. J. H. Egbert, Willimantic, Conn.

167. **Defectives and Degenerates.**—Keniston urges that the state law prohibiting the marriage of epileptics and the feeble-minded should be enforced. It should be somebody's business to enforce it. All "imbeciles with criminal instincts" should receive life-long care and supervision. Sterilization of the unfit—vasectomy—is essential, as it benefits the individual as well as the community. Prevention is the most important thing, if it be possible. Every physician should study and record every defective or degenerate he knows to be such.

168. **Animal Serum in the Treatment of Hemorrhage.**—Beach reports 8 cases, 3 in which the serum was used as a prophylactic and in 5 in curative doses, 2 of the latter patients being hemophiliacs.

Journal of Abnormal Psychology, Boston

June-July

170 The Relative Value of the Affective and the Intellectual Processes in the Genesis of the Psychosis Called Traumatic Neurasthenia. T. A. Williams, Washington, D. C.
171 The Anxiety Neuroses. A. A. Brill, New York.
172 The Nature and Cause of Galvanic Phenomenon. B. Sidis, Brookline, Mass.

Journal Advanced Therapeutics, New York

July

173 Ionic Surgery in Cancer of the Mouth and Nose. G. B. Massey, Philadelphia.
174 The Clinical Application of Various Electrical Modalities. J. H. Burch, Syracuse.
175 Electrotherapeutics in Gynecology. W. H. White, Boston.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London

July 30

1 *The Evolution of the British Medical Association and Its Work. H. T. Butlin.
2 *The Dominance of Etiology in Modern Medicine. J. M. Bruce.
3 *Malignant Disease. H. G. Barling.

1. **Evolution of the British Medical Association.**—Butlin limits himself entirely to an historical review of the British Medical Association.

2. **Modern Medicine.**—After a brief review of some of the most important advances which have been made in medical science and practice during the 15 years which have elapsed since the Association last held its meeting in London, Bruce draws attention to the general nature and character of the progress made. This, he points out, has been chiefly characterized by a change in the general tendency and direction of investigation, so that instead of concentrating attention on the lesions produced by disease we have advanced to the elucidation of the processes leading up to those lesions, the causes determining them, and the various influences controlling and modifying the actions of those causes. The recognition of the paramount importance of etiologic considerations and of the closely cognate subject of functional pathology is regarded by Bruce to be deserving of historic recognition as the dominant feature of the medical research of the past 15 years.

After demonstrating the fundamental importance of the doctrine of causation, Bruce proceeds to analyze the nature of causative processes and of their relation to one another. Taking as an example acute infections, he differentiates three factors—first, the essential cause, which is specific in nature and extrinsic in origin; second, the patient's resistance, which is intrinsic; and, third, those various conditions which favor the action of the exciting cause, and are usually classed as incidental, indirect, or predisposing causes. It is more particularly to this third etiologic factor that Bruce devotes the greater part of his address, pointing out the importance of these considerations to the practitioner, not only as most valuable aids to prognosis, treatment and personal hygiene, but also as affording him valuable opportunities to participate in the advance of medical science. The bedside, the home, and the general environment of the patient, he says, offer fields for research as hopeful and as fruitful as the laboratory. It is with a patient, not with a disease, that the experienced practitioner is concerned, with a process, not with a lesion. Such a man appeals to the clinical laboratory when it can assist in the discovery of the exciting cause or in the determination of the organ at fault, but in his actual search for the cause of disease in his patients he has more often to rely on personal observations of the subject, of his surroundings, habits and mode of life, on knowledge of particular family history, and, perhaps, on general knowledge of human nature, the outcome of worldly experience.

3. **Malignant Disease.**—Barling discusses the subject from three premises: (1) What experiment has taught us as to the growth of transplanted carcinoma and the methods by which immunity can be conferred on inoculated animals; (2) our knowledge of resistance to malignant disease in the human subject; (3) the means available for its successful treatment. He says that experiment has told us much of the growth of cancer, and of the means by which inoculated tumors may be inhibited and cured, but it has nothing yet to tell of the origin of cancer. Experimental immunity has so far been obtained within very narrow limits, and the alleged successful treatment of mouse carcinoma by a fluid from the human subject appears to contradict practically all that has been hitherto demonstrated with regard to experimental immunity.

Of the absolute nature of the resistance to malignant disease at present we know little, if anything. We cannot recognize the factor which heightens or lowers it, whether it be a chemical variation in the tissues, or an influence produced through the nervous system, stress or anxiety perhaps exaggerating or exaltation diminishing the activity of the growth. Barling thinks, however, that we can recognize one striking feature in the destruction of the cancerous epithelium which is common to the experimental production of immunity, to the disappearance of growths under radium, to spontaneous recessive processes in the human body. This is the active part played by the connective tissues; we have an irritative overgrowth, with hyperplasia and subsequent contraction, which appears to determine the death of the epithelial cell.

Speaking of the means available for the cure or the amelioration of malignant growths, Barling says that certain modes of treatment by cancer serums, by drugs, and by enzymes may be disregarded as futile. The *x*-rays have a real field of usefulness in relieving pain, in reducing the activity of inoperable growths, in healing rodent ulcers, if we are justified in including these among malignant formations. When, however, we examine the absolute curative value of this method of treatment, disappointment awaits us. Barling has never known an unequivocal malignant growth absolutely disappear under the influence of the *x*-ray, though apparently others have occasionally been more fortunate. Radium, he thinks, is curative in rodent ulcer, with this reservation, that the permanence of cure must be certified by a longer period of time than has yet elapsed in most of the cases treated. His main objection to the use of radium even tentatively in such cases is the constant danger of lymphatic and vascular dissemination which may occur in the period occupied by treatment. For the present he would limit radium to the treatment of the least hopeful conditions until much wider experience has been obtained.

As to the treatment advocated by W. B. Coley, especially for sarcoma, the use of the mixed toxins in Great Britain has not given such results as those attained by the originator of the treatment. In the majority of Barling's patients no improvement has been effected, but in others he can speak of improvement which promises cure if further lapse of time confirms the results at present attained. With such experience as he has made, Barling would not advise any patient with an operable sarcoma to adopt Coley's treatment, and he would dissuade him from it as a substitute for operation, but if operation were refused, or the growth were inoperable, he would advise the use of toxins, with the expectation that some patients would be greatly benefited. With every desire to use all means available which may relieve patients of the distress, anxiety, and possible mutilation which operation inflicts, with the belief that time will provide happier and gentler means than we now possess, Barling says that at the moment we have to rely on operative measures as the great remedy for malignant disease. If all malignant growths could be excised at a certain stage in their development all these patients could be cured.

Lancet, London

July 30

4 *The Evolution of the British Medical Association and its Work. H. T. Butlin.
5 *Recent Progress in Medical Science. J. M. Bruce.
6 *Malignant Disease. H. G. Barling.
7 *Pathology of Prostatic Enlargement. F. T. Paul.
8 *Helminthic Infection and Its Relation to Eosinophilia. G. D. Whyte.
9 Volvulus of the Cecum and Ascending Colon. R. J. Pye-Smith.
10 *Successful Treatment by Colon Lavation of Some Cases of Eczema, Psoriasis, Urticaria, Acne, and Pruritus. A. Mantle.
11 Cesarean Section Undertaken in the Presence of Septic Infection. R. D. Maxwell.
12 Prevention and Correction of Deformity Following Arthritis of the Hip-Joint. R. F. Rowlands.
13 Pretuberculosis and Prepulmonary Tuberculosis: Their Diagnosis in Relation to School Inspection. W. Ewart.
14 *A Method of Staining Deep Colonies in Plate Cultures *in Situ* in Agar Media. E. Dodson.
15 Thrombosis of the Inferior Mesenteric Vein. A. A. Straton.

4, 5, 6. See Abstracts Nos. 1, 2 and 3.

7. **Pathology of Prostatic Enlargement.**—It is held by Paul that the accepted theories as to the cause of prostatic hypertrophy all fail because each can only apply to a limited number of cases. The prostate and the breast are both controlled by their respective dominant sexual glands and respond to their influence in a similar way in health and disease. Both organs are subject to a disturbing influence at the climacteric period, which may, and frequently does, result in a hypertrophic change. In such change the microscopic appearances in the two organs show a remarkable resemblance in all essential details. Prostatic hypertrophy, like the mammary involution hypertrophy, occurs only at the climacteric period, whereas there is no known neoplasm which is so strictly limited to an age-period. For these reasons, Paul considers that prostatic hypertrophy is not due to a chronic inflammation of

septic or specific type nor to a neoplasm, but that it is an involution change similar in character to that occurring in the mammary gland.

8. **Helminthic Infection.**—The work on which this study is founded was undertaken to ascertain whether the *Clonorchis sinensis* (syn. *Opisthorchis sinensis*, is or is not responsible for any degree of eosinophilia. In only 2.1 per cent. out of 512 patients examined did the feces fail to show the ova of one parasite or another. *Ascaris lumbricoides* was found in 76 per cent. of the cases, and was equally prevalent among students, merchants and farmers. *Trichocephalus trichiuris* was found in 72.6 per cent. All classes were equally infected by it. *Ankylostoma duodenale* and *Uncinaria americana*—one or other of these parasites was found in 60.4 per cent.; both were often present in the same individual. *Clonorchis sinensis* was found in 16 per cent. out of 267 patients examined at Chao-chow-fu, but in only 2 out of 295 patients in the hospital at Suabue. Both of these cases were imported from the Chao-chow region. The natives of both regions have the same dietetic and other habits. Whyte claims that the more varieties of parasite that infest a man, and the more numerous the individuals of each variety, the greater degree of eosinophilia he is likely to show. This will be especially marked if he is between 20 and 40 years of age, and will be less noticeable if he is older or is suffering from some form of tuberculosis.

10. **Successful Treatment by Colon Lavation.**—The benefit derived from lavage of the colon in certain cases of cutaneous eruptions suggested to Mantle that the skin disturbance should be more frequently associated with toxic absorption from the bowel than from the stomach, though doubtless the two absorptions are frequently associated. Mantle claims frequently to have found, after some experimental douches in cases of eczema, usually with, but at other times without, constipation, a considerable amount of mucus, and treatment directed to this abnormality has resulted in the cure of the skin manifestation. He has, therefore, been led to connect the abnormal condition of the colon with the eczematous condition of the skin, and to consider the latter as due to a toxemia of intestinal origin. When there is no skin eruption following a definite type with this condition of colon, there is usually a muddy appearance of the skin noticeable, and sometimes, in addition to this, an eczematous or other eruption. In several cases of psoriasis when the symptoms and experimental douching have pointed directly to an intestinal causation, the treatment already described has been brilliant in its results. In other cases with no particularly well-marked colitis good results have often, though not invariably, attended washing out the colon. A number of cases of acne vulgaris and of acne rosacea, the latter being in association with acne vulgaris, have been treated on these lines. Intestinal lavation has been prescribed with success, but as in practically all these cases there is found a lack of proper attention to the scalp, this as well as the face must receive special attention.

With pruritus ani there is not infrequently a certain amount of eczema around the anus, and the rectal mucosa is often involved in the itching. In all cases in which eczema has existed, Mantle has found it to be the external and visible sign of a catarrhal condition of the mucous membrane of the colon, and internal douches of alkaline sulphur water, followed by immersion baths of the same water, have brought about such a marked change in the condition of the colon that the local skin lesions have soon cleared up.

The method adopted in carrying out this special treatment by lavage for mucous colitis, associated or not with skin eruptions, is as follows: An alkaline sulphur water is generally used both for the intestinal douche and for the immersion bath which follows it. The object of the internal douche is to wash away old fecal matter and mucus from the colon, and to give the mucous membrane an antiseptic dressing. This is done in the following way: A long rubber tube, after being sterilized by boiling, is passed into the sigmoid and is attached to a hydrostatic douche, when from 20 to 40 ounces of sulphur water at a temperature of 105 F. pass into the colon at a pressure of two feet, the patient lying first on the right side, then on the back, and lastly on the left side during the operation. This is repeated, and the ejecta after each douche are carefully examined. A warm immersion bath of sulphur water follows the internal douche and when in this bath a hot douche at a higher temperature plays on the wall of the abdomen under water from a large nozzle with fine perforations, and is chiefly directed over the site of the colon.

14. **Method of Staining Deep Colonies.**—The plates are made in Petri dishes in the usual manner. Ordinary agar can be used; the method is equally successful with modifications of agar, such as glucose, glycerin and whey agar. With a sterile scalpel cut a square of the desired size around the colony and lift out the slab of agar by inserting a wet chisel under it. Push the slab on to the slide, taking care to include no air bubbles; allow to dry in 37 C. incubator or other hot place, and soak in methylated alcohol for 20 minutes. Next put in 5 per cent. solution of the acetic acid for about 10 minutes to dissolve surface crystals. Wash and dry in incubator until the agar is quite dry, which usually takes about 20 minutes. Pour on scarlet writing fluid and allow to remain on until the deep colonies are well stained. This usually takes from 10 to 20 minutes, according to the thickness of the agar. Pour off and blot the edges and press lightly with soft paper to express any ink that may run under the edges of the slab. Now pour on Löeffler's methylene blue, diluted with an equal volume of distilled water, and tilt the slide well until the ink is discharged from the agar and it turns violet. Decolorize in spirit until the color ceases to come out in a visible cloud; finish dehydration in aniline oil, pass into xylol, and mount in Canada balsam. It will be found that the organisms are stained a deep purple, and the agar medium a very pale green.

Medical Press and Circular, London

July 20

16 Displacements of the Uterus. H. R. Andrews.
17 Relation of Light Perception to Color Perception. F. W. Edridge-Green.
18 Preventive Measures and the Administrative Control of Tuberculosis. H. Scurfield.
19 The Permanent Slow Pulse. P. Rostaigne.

The Australasian Medical Gazette, Sydney

June

20 Infantile Mortality, A. J. Turner.
21 *The Bacterial Content of Ice Cream. B. Bradley.
22 Infantile Paralysis. J. M. Gill.
23 Recent Investigations on Infantile Paralysis. G. Craig.
24 Surgical Treatment of Infantile Paralysis. M. Hers.
25 Urethral Fistula. W. A. Verco.
26 Diabetes Associated with Disease of the Pancreas. C. T. Ch. deCrespigny.
27 *Rectal Serotherapy in Obstinate Gonorrhea. A. G. Salter.
28 Diabetes Insipidus and Chronic Hydrocephalus. P. T. S. Cherry.

21. **Bacterial Content of Ice Cream.**—The 28 specimens of ice creams and ices examined by Bradley in the majority of cases disclosed gross contamination with organisms of fecal origin and cocci of the pus-forming type, not with simple air-borne organisms, indicating that the contamination is most likely: (1) from milk used; (2) from dirty receptacles; (3) from handling. In 6 quantitative examinations the organisms growing in 12 hours at 37 C. exceeded 30 millions per c.c. in 3 cases. In one case there were over 17 millions, in another 500,000, and in a third the ice was possibly sterile, not 20,000 per c.c. The colon bacilli were present in the typical fecal types, and the numerical distribution of these types was such as one would find in feces.

27. **Rectal Serotherapy in Gonorrhea.**—This case responded remarkably to rectal serotherapy, after failure with all other usual remedies. Treatment was unsatisfactory as the patient was off and on alcoholic. He had various mixtures and injections, with no improvement; the discharge continued to be profuse, and he got into a miserable state, with incontinence of urine and strangury. Six months after the initial infection Salter began a course of vaccine treatment, the prostatic symptoms cleared up. During the course of this treatment the patient got relief from incontinence, but the discharge was apparently uninfluenced, and remained profuse and purulent. Then Salter injected rectally 10 c.c. polyvalent anti-

streptococcus serum, repeating the dose on the two succeeding days. This was followed by immediate and marked improvement; the discharge ceased entirely for two weeks, but as a slight purulent discharge then reappeared, Salter repeated the rectal injections thrice. After this the purulent discharge cleared up, a little mucus discharge only remaining in the morning.

Australian Medical Journal, Melbourne

June

29 *Treatment of Fractures Implicating Joints. R. H. Russell.
30 *Spinal Fractures. J. S. Buchanan.
31 Recent Fractures of the Extremities. G. C. Rennie.
32 Fractured Spine and Injury to the Intestine. C. H. Mollison.
33 Radium Treatment of Superficial Lesions. C. E. Dennis.
34 Theory of the Graphic Method in Studying Heart Disease. M. C. deGaris.
35 Failing Gouty Heart. J. W. Springthorpe.
36 The Clinical Polygraph (Modified). E. M. Sweet.
37 Leukemia. E. W. J. Ireland.

29. Treatment of Fractures Implicating Joints.—The following precepts are made by Russell:

1. In fracture involving, or in the immediate vicinity of a joint, where there is no gross displacement of the articular surfaces, stiffness of the joint never supervenes, except as the result of passive motion carried out by the surgeon.

2. In fractures involving joints in which there is some displacement or irregularity of the joint surfaces, and in which, therefore, some impairment is inevitable, such stiffness will be greatly aggravated by the employment of passive movement; and complete abstention from passive movement by the surgeon will yield the best results attainable.

3. When great stiffness is present, in spite of the surgeon's efforts to increase the mobility by passive movement, such stiffness will persist so long as the surgeon persists.

4. When the surgeon abandons the case in despair, improvement will at once commence.

Condensing these four laws into one weighty generalization, he says that in fractures involving joints the most potent cause of stiffness is the so-called passive movement performed by the surgeon. Immobilization is never a cause of stiffness. The maximum degree of permanent usefulness is to be obtained by immobilization alone.

30. Simple Fractures.—Buchanan agrees with Russell that in cases of fracture involving joints there are a fairly large number in which early passive movement is not remedial. The methods of Lane and Lucas-Championnière he regards as impracticable, because usually there is no necessity for that of the former nor for that of the latter because its use seems to be fraught with the gravest danger, especially if the movements carried out are not of the mildest character, and directly under the supervision of a skilled person. During the past five years Buchanan cannot recall a single case of marked deformity, ununited fracture or impaired use of the limb in such cases treated by the more ordinary method of manipulation, careful coaptation, assisted by the use of radioscopy, fixation by splints of muscles and joints of the affected limb.

Annales de Gynécologie et d'Obstétrique, Paris

July, XXXVII, No. 7, pp. 385-448

38 *Gangrenous Perforation of the Aborting Uterus. G. Fieux.
39 *Tubal Pregnancy. (Deux cas rares de grossesse ectopique.) P. Lecène.
40 *Tetany During the Puerperium. V. Wallich.
41 *Superheated Air in Treatment of Gangrenous Lesions After Delivery. (Emploi de l'aéro-thermo-thérapie dans les plaies gangréneuses succédant à l'accouchement.) R. Dupont.

38. Gangrenous Perforation of the Uterus after Abortion.—The case reported by Fieux shows that a gangrenous process may develop in the aborting uterus solely from partial retention of the placenta and putrefaction of the adherent mass. The gangrene may progress to an eschar entailing perforation as it drops off, and all this may occur without any direct traumatism of the uterine wall. Varnier has reported a similar case. In both, the abortion had been induced by an intrauterine injection, the nozzle of the syringe not being long enough to reach into the uterus.

39. Hemorrhagic Extrauterine Pregnancy.—In the first case fecundation dated from only a few days and the tube was permeable, without rupture, the hemorrhage pouring into the peritoneum. The blood oozed for more than two days until the tube was removed. In the second case the ovum settled in a diverticulum in the already inflamed tube.

40. Tetany in the Puerperium.—Wallich's patient developed tetany the seventh day after delivery, on receiving news of the illness of her child. Pinard has encountered but one similar case in his long practice. Wallich inquires whether others have met with cases of this kind, remarking that it is necessary to restrict so far as possible the disturbances laid to the score of the puerperal condition, as physicians should never lose an occasion to demonstrate that pregnancy, childbirth and lactation are physiologic states for the normal woman and not pathologic.

41. Superheated Air in Treatment of Gangrenous Wounds.—The wounds to which Dupont refers are the obstetrical tears which suppurate and show little tendency to heal. He has obtained excellent results by application of superheated air; the hot douche penetrates into all the infected crevices and destroys the putrefying tissues while inducing a reparative hyperemia in the surrounding tissues. In one of the three cases reported in detail this aerothermotherapy rapidly arrested the gangrenous process in the cervix and the development of the threatening vesicovaginal fistula was checked.

Annales des Maladies des Org. Génito-urinaires, Paris

July 1, XXVIII, No. 13, pp. 1153-1248

42 *The Venous Circulation of the Kidney. (Etude sur la circulation veineuse du rein.) E. Papin and Jungano.
43 Both Kidneys on Same Side. (Le rein ectopique croisé.) E. Papin and Palazzoli.

42. The Venous Circulation of the Kidney.—In the 28 illustrations accompanying this article the authors show that the venous system in the kidney differs materially from the arterial system, and that the descriptions in the text-books are incorrect in a number of points.

Archives des Maladies du Cœur, etc., Paris

July, III, No. 7, pp. 401-463

44 Ectopia of the Heart from Defect in the Sternum. G. Foy.
45 Case of Acute Leukemia of Myeloid Type. Rieux, Savy and Courjon.
46 Cardiovascular Modifications from Carbonated Baths. (Modifications cardio-vasculaires qui se produisent sous l'influence des bains artificiellement chargés d'acide carbonique, d'après les données de la tachographie.) D. Pletnew.

Lyon Médical, Lyons

July 10, CXV, No. 28, pp. 1-44

47 Advantages of Heliotherapy for Sluggishly Healing Wounds and Leg Ulcers. (Héliothérapie dans le traitement des plaies atones et en particulier de l'ulcère variqueux.) Jaubert.
48 Radiography of the Fetus in Utero. (Fabre, Barjon and Trillat.

July 17, No. 29, pp. 45-100

49 Alopecia of Dental Origin. (A propos de la pelade d'origine dentaire.) P. Jourdanet.

Presse Médicale, Paris

July 20, XVIII, No. 58, pp. 553-560

50 Operation for Secondary Strabismus. (La cure chirurgicale du strabisme secondaire: déviation inverse post-opératoire.) A. Terson.

July 23, No. 59, pp. 561-576

51 Serotherapy of Snakebite. (Sérothérapie antivenimeuse.) M. Arthus.
52 The Seine Freshets Have No Influence on Incidence of Typhoid. J. Bertillon.
53 Talipes Equinovarus. (Le pied creux équin.) C. Ducroquet.

Revue de Chirurgie, Paris

July, XXX, No. 7, pp. 1-236

54 *Oblique Osteotomy Through the Trochanter in Treatment of Vicious Ankylosis of the Hip-Joint. E. Quénu and P. Mathieu.
55 *Umbilical Fistulas Consecutive to Gall-stone Cholecystitis. M. Patel and G. Cotte.
56 Torsion and Strangulation of Seroappendices Epiploicæ in Hernial Sacs. L. Kendirdjy and P. Sejournet.
57 *Special Form of Pseudocoxalgia Grafted on Characteristic Malformations of the Upper End of the Femur. J. Calvé.
58 Mikulicz' Disease. (L'hypertrophie chronique et simultanée des glandes lacrymales et salivaires.) P. Sejournet.
59 Lateral Suture of the Portal Vein. P. Hallopeau.

54. Oblique Osteotomy through the Trochanter for Vicious Ankylosis.—Quénu and Mathieu give an illustrated description of 3 patients whose deforming ankylosis of the hip-joint was corrected by sawing the femur from the top of the trochanter oblique to a point low down on the other side. The extreme slant permits the neck part to be slipped up on the shaft, thus lengthening the limb while it leaves the largest possible areas of the stumps in contact after correcting the position of the shaft. For correction of a shortening of 8 cm. the line

of section should be at least 10 cm. long which leaves 2 cm. of the cut surfaces still in close contact, not merely the points alone. The slanting section causes the parts to be pressed together along the entire length of the cut surfaces in contact, the contact being aided by traction from the muscles. The osteotomy must be followed by continuous extension, they state, until the parts have healed. By flexion of the trunk on the thigh, rotation of the femur on the pelvis, after the consolidation has reached a certain point, it is possible to obtain some loosening of the ankylosis, aiding materially in the patient's ability to get about later.

55. **Umbilical Gall-Stone Fistula.**—In the case reported by Patel and Cotte the fistula developed from a gall-stone forcing its way out through the skin from the inflamed gall-bladder. The patient was a woman of 37 who had borne three children and had had gall-stone colic at times during the last 11 years. She was cured of all disturbances by an operation similar to that for obliteration of an artificial anus.

57. **Special Type of Pseudocoxalgia.**—In over 500 cases of coxalgia, Calvé has encountered 10 in which a brief subacute arthritis healed without impairment of movement, but a pre-existing deformity of the bone persisted unmodified. The children had coxa vara or hypertrophy, atrophy or deformity of the head of the femur, but there was no destruction of bone tissue at any point. The type does not correspond to any of the known forms of hip-joint disease, and it has generally been mistakenly diagnosed as a tuberculous coxitis. The children begin to be occasionally a little lame and complain of pain in the knee, the movements of the joint are limited and there is some muscular atrophy in the region. After a certain period the pain subsides, with or without extension in the interim, and the children walk normally or with a slight limp. The features of the cases differ entirely from those of dry caries of the hip-joint and deforming juvenile osteoarthritis. In his first cases differentiation was retrospective by examining more attentively the radiographs which had been taken as the children first came under treatment for supposed tuberculous hip-joint disease.

Revue de Gynécologie, Paris

July, XV, No. 1, pp. 1-96

60 *Hemorrhages in the Non-Pregnant Fallopian Tube. (La pachysalpingite hémorrhagique.) L. Bazy.

60. **Hemorrhages in the Non-Gravid Tube.**—Bazy's profusely illustrated article is based on 2 cases and on 2 other less typical examples of what he thinks may be described as a hemorrhagic pachysalpingitis. In a fifth case a tubal pregnancy was accompanied by this form of inflammation in the other tube. The rupture of the gravid tube put an end to the pains on this side while the pains in the pachysalpingitic tube persisted unmodified. Differentiation of this hemorrhagic inflammation is practically impossible, he says, before operating.

Revue de Médecine, Paris

July, XXX, No. 7, pp. 529-612

61 *Clinical Study of the Rhythm of the Secretion of Urine and of Diuresis Induced by Ingestion of Water. H. Vaquet and J. Cottet.
62 *Incomplete Form of Pericholecystitis of Gall-stone Origin. P. Londe.
63 Influence of Intoxication from a Substance Inducing Anaphylaxis on Nitrogen Metabolism. P. Lassablière.
64 Action of Vichy Thermal Waters on Arterial Tension. A. Therre.

61. **Clinical Study of the Rhythm of the Secretion of Urine and of Diuresis Induced by Ingestion of Water.**—Vaquet and Cottet emphasize the importance of not drinking more fluid than the kidney is able to eliminate; in heart and kidney disease the amount should thus be reduced to conform to the eliminating power of the kidneys. This they test by the experimental polyuria test, that is, the diuresis that follows ingestion of over a pint of water, fasting, the patient reclining for nearly two hours afterward. Recumbency materially promotes the diuresis, and they advise having the patients lie down for a couple of hours after the morning draught in all courses of mineral waters. Obese patients lose weight more rapidly with this recumbency to promote diuresis than when they keep up after drinking the water. The rhythm of secretion of urine is tested by keeping separate the urine voided between 9 p. m. and 7 a. m.; 9 a. m. and 9 p. m. and between 7 a. m. and 9 a. m.; the latter period is that of the experimental polyuria after ingestion of 600 c.c. of mineral water (Evian).

62. **Pericholecystitis.**—Londe gives the details of 15 cases out of a total of 30 or 40 of a syndrome including a tendency to vomiting, vague abdominal pain and dyspepsia and more or less tenderness in the gall-bladder or stomach region or below. The pain sometimes is referred to the right shoulder as the abdomen is palpated. The main danger from the pericholecystitis is infection of the peritoneum, and operative treatment is justified with a history of some preceding severe attack, or the lingering nature of an apparently mild syndrome. Beware, Londe says, of the cases in which the patient eats and feels well but gradually tends toward cachexia—any discordance between the subjective and objective signs is instructive. The prognosis is less favorable if mild cholagogues and alkalines are not borne well, as in chronic appendicitis. Some of the cases reported in detail show the danger of delay in operating when the recurring attacks grow more severe. In one such case, subhepatic peritonitis developed and the patient succumbed to thrombosis. In one case the subfebrile pericholecystitis seemed to flare up anew before the menses each time.

Semaine Médicale, Paris

July 7, XXX, No. 80, pp. 349-360

65 *Hypnotism in Therapeutics and from Medicolegal Standpoint. J. Babinski.

65. **Hypnotism from the Therapeutic and Medicolegal Standpoints.**—Babinski is inclined to regard hysteria as about half simulation, and hypnotism the same. For example, he says, if a hypnotized individual has suggested to him that the house and stairway are on fire, he may exhibit terror but he will never be so terrified as to jump out of the window. Numbers of hysterical individuals have been cured after they have been hypnotized, he remarks, but psychotherapy waking would have been equally effectual in all, unless the hysterical patients had clamored for the hypnosis. From the medicolegal standpoint he insists that hypnosis does not deprive the subject of will-power to the point of committing a crime which he would not commit under other circumstances. The hypnotized individual is responsible for criminal deeds which he may commit, and even slight attenuation of the responsibility can be admitted only when the individual has been in the habit of being hypnotized frequently so that a special hypersensitiveness may have developed.

Archiv für klinische Chirurgie, Berlin

XCII, No. 3, pp. 597-912. Last indexed Aug. 13, p. 630

66 *Experiences with Ileus and Paralysis of the Intestines. (Ueber Darmverschluss und Darmparalyse, einschliesslich Peritonitis.) H. Thiemann. Commenced in No. 2.
67 Experiences with Stovain Spinal Anesthesia. (Beitrag zur Lumbalanästhesie mit Stovain-Billon.) F. Michelsson.
68 *Indications for and Mode of Action of Gastroenterostomy. A. Blad.
69 *Plastic Operations on the Face. (Zur Gesichtsplastik.) E. Lexer.
70 *Cancer Metastasis in the Ovaries and in the Cul-de-Sac of Douglas. (Zur Frage der Krebsmetastasen in den Ovarien und im Cavum Douglasii.) J. Rosenstirn.
71 *Prophylactic Plastic Operation for Duodenal Ulcer. (Die omentale Enterokleisis bei acut ulcerativen Processen der letzten Dünndarmschlinge.) S. Bollert.
72 Operative Treatment of Pendulous Breasts. (Ueber Mastoptose und Mastopexie.) C. Girard.
73 Torsion of Great Omentum. (Torsion des grossen Netzes.) S. Hadda.
74 Trephining the Long Bones for Osteosclerosis with Intense Pains. (Trepanation der langen Röhrenknochen bei Osteosklerose mit heftigen Schmerzen.) A. Nehrkorn.
75 Practical Outcome of Free Transplantation of Fascia. (Die praktischen Ergebnisse der freien Fascien-Transplantation.) M. Kirschner.

66. **Lessons from Ten Years of Abdominal Operations.**—Thiemann reviews the experiences at the surgical clinic at Jena in charge of Riedel, and emphasizes the following points:

Swallowed foreign bodies very rarely cause ileus. If the foreign body has passed through the esophagus it generally slides along through the bowel without causing obstruction; the great danger is perforation, and when this occurs it is generally in the descending part of the duodenum. Characteristic for perforation by a foreign body is a peculiar tough induration of the vicinity, which may secondarily interfere with the permeability of the bowel.

Cancer of the duodenum causes comparatively slight local symptoms in comparison with the general cachexia.

The favorable influence of a simple laparotomy on tuberculous peritonitis is confirmed by the experiences related.

The success of operations for correcting atresia of the rectum is often compromised by malformations elsewhere.

In 36 of the 321 cases of incarcerated hernia the trouble was an acute partial enterocele; the disturbances are so slight while there is so much danger of perforation even with cautious reduction that the mortality is unusually high, 44 per cent. It occurs almost exclusively with femoral hernia, but 3 out of the 4 cases of obturator hernia were partial enteroceles.

The symptoms with torsion of the appendices epiploicæ were extraordinarily severe.

The best measures to sustain the patient after operations are rectal saline infusion and systematic lavage of stomach and bowel.

Physostigmin generally fails, and saline-suprarenal extract infusion has only transient effect in peritonitis.

Perforation of a typhoid ulcer is inevitably fatal unless the process becomes walled off by adhesions.

In little girls, the peritonitis set up by diplococci, staphylococci or streptococci has a grave prognosis, contrary to that of gonococcus peritonitis. In 15 cases of this kind, only 2 of the patients were saved. In one case a right crucial incision showed the whole abdomen full of pus, the appendix being apparently normal and the tubes inflamed. After wiping out the abdomen it was completely sutured and the girl, aged 13, recovered after a few days of fever. Infection is by way of the genital tract and it may occur without lesions in the latter.

Symptoms suggesting ileus may develop after pneumonia, pleurisy and pericarditis, but the abdominal findings are negative. An important differential sign in such cases is the good aspect of the tongue.

Chloroform general anesthesia does not seem to affect the course of pneumonia unfavorably.

With acute dilatation of the stomach resisting all other measures, gastroenterostomy is justified.

Postoperative paralysis and dilatation are most effectively combated by early systematic lavage of the stomach.

Saline rectal infusion seems to be the most effectual means to prevent postoperative adhesions but the adhesions developed by the suppurative process are not influenced by it.

All stumps should be covered with peritoneum, and before removing a high rectal cancer, the peritoneum should be shut off above through a left crucial incision.

68. Indications for and Mode of Action of Gastroenterostomy.—A similar article giving Rovsing's views and experience was summarized in THE JOURNAL, Jan 15, 1910, page 248.

69. Plastic Operations on the Face.—Lexer's article is accompanied by 35 illustrations showing his technic and the results in various cosmetic operations, formation of a nose or ear, correction of hare-lip or defects left from removal of cancers in the face; in some cases he transplanted part of the scalp to supply a moustache or beard, in others a wedge from the tibia to make a frame for the nose. In some cases he supplied the lacking support for the skin by inserting a flap of adipose tissue from the abdominal wall. The favorable results of this free fat transplantation and of similar experiments on animals promise a future for this method. In the first case it was applied to remedy a deep depression in the cheek and temple left from suppuration after traumatic injury; in the other case to remedy ankylosis and atrophy of the jaws, introducing the round flap of fat through an opening under the chin. This method has been applied since to correct defects in the breast after excision of a benign tumor and for defects in the cheek.

70. Cancer Metastasis in Ovaries and Pouch of Douglas.—Rosenstirn reports 15 cases which emphasize the importance of the attraction of gravity in determining the location of metastatic growths from abdominal cancers. The primary cancer may be still securely enclosed in serosa and yet metastasis by implantation may occur from it. The laws of gravity, he declares, explain why the ovaries are so often involved. Still more often the implantation occurs in the very lowest part of the pouch of Douglas, and it is important to examine this region in all operations for abdominal cancer.

74. Prophylactic Plastic Operation for Acute Ulcerative Intestinal Lesions.—Solieri reports a case of paratyphoid intestinal ulceration in which he wrapped the bowel, just as it was on the point of perforation, in part of the omentum, fastening the omentum to the mesentery just below its attachment to the loop in question. The laparotomy did not affect the patient unfavorably, while the protecting sheath of omentum thus provided for the bowel warded off perforation and peritonitis. He calls the operation "omental enterocleisis" (from kleio, I surround), and remarks that it is scarcely more serious than an exploratory laparotomy.

Beiträge zur Geburtshilfe und Gynaekologie, Leipsic

XV, No. 3, pp. 317-476. Last indexed May 28, p. 1830

76 Another Case of Total Isthmic Placenta Prævia. Pankow.
77 *Abnormal Development of the Pelvis. (Ueber Entwicklungsstörungen des knöchernen Beckens: Assimilationsbecken und infantile Becken.) K. Hegar.
78 Case of Hemiacardius. H. Hunziker.
79 *Hypoplasia and Infantilism in Relation to Gynecology and Obstetrics. A. Mayer.
80 Holoacardius abrachius peropus. A. Sitzenfrey.
81 Placental and Congenital Tuberculosis. G. Leuenberger.

77. Abnormal Development of the Pelvis.—Hegar remarks that much can be done in prophylaxis and correction by breast-nursing, improving the hygienic conditions of the poor, and physical training of the young. Nature strives to correct disturbances in development by tardy growth late in life. This is observed especially in women under the influence of married life and pregnancy. The uterus and breasts may grow out of an infantile condition late in life; likewise the pelvis, at an age when its growth might be considered as definitely arrested, may continue to develop, especially under the influence of pregnancy. This may explain Sellheim's observation that the proportion of women with infantile pelvis grows constantly smaller after the age of 25 to 30.

79. Hypoplasia and Infantilism in Relation to Gynecology and Obstetrics.—Mayer discusses the various manifestations of hypoplasia and infantilism in the genitalia and the clinical importance of these anomalies, especially the light which they throw on physical processes. His article is based on the experiences at the Hegar, von Rosthorn and Sellheim clinics for women's diseases, and is profusely illustrated. Individuals of this type, he says, must be regarded as "unfinished," and the resulting disturbances have special importance from the standpoint of social insurance against invalidity.

Berliner klinische Wochenschrift

July 18, XLVII, No. 29, pp. 1353-1396

82 Radioscopic Diagnosis of Gastro-Intestinal Stenosis. (Zur Röntgendiagnostik der Stenosen des Verdauungstraktes.) J. Tornai.
83 Cystoscopy with Turbid Urine and Ureter Catheterization with Infected Urine. M. Hoffmann.
83 Determination of Tubercle Bacilli with Lupus Erythematodes. G. Arndt.
85 Complement-Binding Reaction in Leprosy. K. Steffenhagen.
86 Serodiagnosis in Syphilis. (Zur Organisation der Serodiagnostik nach Wassermann.) G. Soberheim.
87 Behavior of Blood Before and After Eating in the Wassermann Reaction. F. Hoehne and R. Kalb.
88 The Wassermann Reaction in Paralytic Dementia. H. Boas and G. Neve.
89 *Treatment of Hysterical Aphonia. M. Senator.
90 Action of Quartz Lamp on Trachomatous Conjunctiva. (Wirkungsweise des Quarzlichtes auf die trachomatöse Bindehaut des Auges.) Hegner and G. Baumm.

89. Treatment of Hysterical Loss of the Voice.—Senator relates that his experiences with Seifert's method of treating hysterical aphonia have not been so favorable as those reported by Seifer, but still he found it successful in a number of cases in which no benefit had been obtained from other measures. The patient's head is bent far over backward or the entire upper part of the body is tilted back. In this position the patients find that they are able to speak or intone. Seifert found that he was unable to speak in a whispering tone when his head was bent over backward in this way. The upper part of the body must be completely relaxed. In the two cases refractory to this measure in Senator's experience, the aphonia was promptly cured by other measures in the first, and in the other a thickening from chronic laryngitis may have been responsible for the failure. He is inclined to explain the success of the measure in general as due to its moral influence, adding another weapon to the armamentarium at our disposal for effectually influencing hysterical aphonia. The list includes manual pressure on the larynx, electric vibration massage, improvement of the respiration, a deep breath being taken before each single sound, and training the patients to speak in a lower key, the hysterical-aphonic patients generally having had a high-keyed voice.

Correspondenz-Blatt für Schweizer Aerzte, Basel

July 1, XL, No. 19, pp. 601-632

91 Inflammation the Result of Changes in Permeability of Cell Membrane. (Ueber die Entzündung als kolloidchemisches Problem.) A. Oswald.
92 *Bronze Diabetes. E. Bernoulli.

July 10, No. 20, pp. 653-664

93 *Acute Infectious Poliomyelitis. H. Eichhorst.

July 20, No. 21, pp. 665-696

94 *Present Status of Cancer Research. (Ueber den gegenwärtigen Stand der Krebsforschung.) M. O. Wyss. Commenced in No. 20.

92. **Bronze Diabetes.**—Bernoulli gives the clinical and autopsy details of a case of bronze diabetes with intense glycosuria in a man of 38 inclined to hemostaxis and headache, with pneumonia three years before. He states that he has found 41 detailed reports of cases of so-called bronze diabetes in the literature, and that in 7 there was no tendency to glycosuria.

93. **Epidemic Poliomyelitis.**—Eichhorst encountered 3 cases last year at Zurich although no epidemic of this disease has ever been known in Switzerland. He mentions that during the last four years an unprecedented number of cases of epidemic cerebrospinal meningitis have been observed at Zurich, from 8 to 23 cases each year at the clinic in his charge. He remarks that epidemic poliomyelitis interests in nearly equal degree the bacteriologists, epidemiologists, internists, neurologists and pediatrists, surgeons and orthopedists, and he applies the great general's appeal to his soldiers: "In scientific things press on alone, if necessary, but in attacking epidemics strike all together."

94. **Cancer Research.**—Wyss concludes his review of the present status of cancer research with the statement that the main thing now is to collect extensive and uniform statistics for comparison. He thinks that cancers should be classed not according to the tissues in which they are formed but according to their localization and origin. For this he proposes four classes:

1. Involution carcinomas: This includes cancer of the uterus, ovaries and breast, that is, organs of reproduction which regularly retrogress, aging according to certain early time limitations.
2. Intestinal carcinomas: This includes carcinomas of the alimentary canal, the organs which are most affected by the mode of life, the food and habits, and which are most subject to repeated mild infections.
3. Irritation carcinomas: This includes the cancers developing from repeated mechanical irritations, especially those of the tongue, lips and skin, larynx and biliary passages.
4. Carcinomas of all other origin or which cannot be grouped with the above, as those in thyroid, pancreas and lungs.

To illustrate the advantages of this classification, he gives a chart showing the prevalence of these various groups in several Swiss provinces during the last eighteen years. The chart shows that the involution cancers are most frequent in the provinces containing the larger cities, while the intestinal cancers and especially gastric cancer are responsible for the larger numbers of cancers in the provinces where cancer is most prevalent, Schwyz and Lucerne.

Deutsche medizinische Wochenschrift, Berlin

July 21, XXXVI, No. 29, pp. 1353-1392

95 *Diagnosis and Treatment of Cardiac and Vascular Neuroses. (Herz- und Gefässneurosen.) T. Rumpf.
96 *Experimental Study of Treatment of Malignant Tumors. K. Reicher. Commenced in No. 28.
97 *Myogenous Leukocytosis. E. Grawitz.
98 *Chloroform Addiction. (Habitueller Chloroformmissbrauch.) Storath.
99 Case of Nodular Rheumatism. O. Thorspecken.
100 Tincture-of-Iodin Sterilization of Field of Operation. (Desinfektion des Operationsgebietes mit Jodtinktur.) K. Streitberger.
101 *Technic for Macerating, Enriching and Staining Spermatozoa in Old Spots of Semen. (Ein neues Mazerations- resp. Anreicherungs- und Färbeverfahren zur Auffindung der Spermatozoen in alten Spermaflecken.) D. Gasis.
102 Acute Otitis Media with Abscess Around the Sinus and Abducent Paralysis. R. Lehmann.
103 Moving Roentgen-Ray Pictures of Internal Organs. (Ueber Röntgenkinematographie—Bioröntgenographie innerer Organe des Menschen.) A. Wertheimer.

95. **Cardiovascular Neuroses.**—After reviewing the differential points Rumpf discusses treatment, emphasizing the necessity for discontinuing tobacco—he has several times, he says, witnessed an acute toxic action on the pulse from a single strong cigar. He also refers to helminths as liable to induce an acute cardiovascular syndrome. Renose is an important factor in treatment, especially an out-of-door rest cure when combined with systematic deep breathing to exercise the diaphragm. He tells the patient to place his hands lightly on the stomach and breathe so that during inspiration the abdomen bulges in front and downward. This relieves the heart materially as the compression of the abdominal contents forces blood and lymph into the thorax, and, as the diaphragm rises, the blood is further forced along in the chest veins. As the pericardium is adherent to the diaphragm, it is drawn down with the latter, stretching the heart lengthwise, and counteracting the widening influence of ordinary breathing. Long-continued, moderately deep, abdominal breathing sometimes permanently retarded the heart rate. The unusually rapid heart action in certain bicyclists may be traced to the lack of abdominal breathing. When the patient has been trained to abdominal breathing, gymnastic exercises can be cautiously commenced but the bending forward or twisting of the trunk must occur during an inspiration, and expiration accompany the raising of the trunk erect. Done in this way the exercises do not accelerate the pulse. All the exercises must be done with abdominal breathing. Massage and rhythmic compression of the abdomen and of the lower thorax are also useful to promote the circulation in the abdomen and with threatening collapse and edema of the lungs. Persons of sedentary habits are liable to do irreparable harm to their heart by over-exercise on vacations; especially the elderly should be warned against rowing, fencing and mountain climbing. The family physician should emphasize the necessity of prophylactic moderate physical exercise which is too often crowded out of the modern strenuous life. Rumpf warns against prescribing spa treatment for functional disturbances, as association with individuals with organic disease is liable to have an unfavorable influence. Mild hydrotherapy can be applied at home; the best measures are those which divert attention from the heart. The suggestive influence of the physician is of paramount importance in those cases in which a mild organic affection is accompanied by severe functional disturbances. A wise wife, Rumpf adds, can protect her husband in these cases against many annoyances and excitements, but what a world of superfluous annoyances a fool of a wife can load on her husband! The choice of reading matter is another element that may favor or hinder a cure.

96. **Experimental Treatment of Cancer.**—Reicher states that the active principle of the suprarenals injected around an experimental tumor on mice almost invariably led to its subsidence. From 5 to 13 injections accomplished this in rats and the results observed, he declares, encourage a trial in suitable clinical cases.

97. **Myogenous Leukocytosis.**—Grawitz examined the capillary blood and the blood from the ulnar vein before and after muscular effort and found in both a marked leukocytosis following the exertion. The leukocytes jumped from 4,400 to 11,200 or 7,500 to 11,700 in a few minutes. The increase cannot, he says, be ascribed to different distribution of the corpuscles. There is pronounced lymphocytosis at first but neutrophile leukocytes soon predominate.

98. **Habitual Use of Chloroform.**—A woman of 51 inhaled from 40 to 60 gm. of alcoholized chloroform (equal parts) almost daily for 15 years, but no signs of a cumulative action were apparent and there were no symptoms on suspension of the chloroform. She acquired the habit from a medical prescription of the preparation to apply locally to the face to relieve severe migraine.

101. **Improved Technic for Forensic Examination of Old Spots of Seminal Fluid.**—Gasis loosens up the spermatozoa with a 1 to 1,000 solution of corrosive sublimate, then stains with 1 per cent. solution of eosin and decolors with a 1 per cent. solution of potassium iodid.

Jahrbuch für Kinderheilkunde, Berlin

July, LXX, No. 1, pp. 1-120

104 *Simultaneous Lime, Phosphorus and Cod-Liver Oil Treatment of Rachitis. (Die gleichzeitige Verabreichung von Phosphorlebertran mit einem Kalksalze bei Rachitis.) J. A. Schabad.
105 Fate of the Fat in Infants' Intestines. (Das Schicksal des Fettes im Darm des Säuglings unter normalen und pathologischen Verhältnissen.) S. Usuki.
106 Chloroma. (Chloroleukämie, Chloroleukosarkomatose.) H. Lehndorff.
107 Hernia of the Diaphragm. (Ueber den Zwerchfellbruch im Anschluss an zwei Fälle.) Z. v. Bokay.
108 *Symmetrical Gangr[illegible] in an Infant. (Raynaudsche Krankheit beim Säugling.) C. Beck.

104. Lime Salts, Phosphorus and Cod Liver Oil in Rachitis.—Schabad writes from the pediatric clinic and laboratory of the Peter-Paul hospital at St. Petersburg to reiterate his former statements in regard to the efficacy of a combination of phosphorus and cod-liver oil in rachitis, and that calcium acetate has a remarkable effect in favoring retention of lime in connection with the phosphorus and cod liver oil. None of the other lime salts he tested seems to have this property, he states, the phosphate and citrate being all eliminated. His work is based on minute research on the metabolism and he tabulates the findings in one of the typical cases examined over a long period.

108. Symmetrical Gangrene in an Infant.—In the case reported by Beck, the first child of healthy parents was apparently healthy until nearly five months old, when the mother noticed recurring capillary congestion and bluish discoloration of the hands, feet and ears. In the course of six weeks the cyanosis recurred every day, gradually becoming almost continuous and gangrene developed. The child died in a month with signs of heart weakness and serious atrophy and beginning gangrene of the left hand. The only pathologic findings at autopsy were patches of thickening of the intima of all the arteries of the extremities and in some of the veins on the arms, while the brain and spinal cord were apparently normal.

Medizinische Klinik, Berlin

July 24, VI, No. 30, pp. 1193-1204

109 *Progress in Abdominal Surgery. (Fortschritte der Magen- und Darmchirurgie.) L. Moszkowicz.
110 *Idiosyncrasy to Cow's Milk in Infants. (Kuhmilchidiosynkrasie bei Säuglingen.) F. Zybell.
111 Compression in Treatment of Phlebitis. (Neue Therapie der Phlebitis.) H. Fischer.
112 Elasto-Massage. (Eine neue Massagemethode.) A. Schnée.
113 *Treatment of Hemoptysis. (Unzweckmässiges und Zweckmässiges bei Behandlung von Lungenblutungen der Phthisiker.) K. Blümel. Commenced in No. 29.
114 Intestinal Hemorrhage in Appendicitis. (Ueber Darmblutung bei Epityphlitis.) C. A. Ewald.
115 Action of Marine Climate on Blood Production. (Einwirkung des Seeklimas auf die Blutbildung.) K. Häberlin.
116 Analysis of Abnormal Muscular Reaction to Electric Tests. (Die sogenannte träge oder wurmförmige Muskelzuckung bei der Entartungsreaktion, ihre Analyse und eine einfache Art der graphischen Darstellung zu Vorweisungszwecken.) A. Martin.
117 Tests for Pentosuria. (Nachweis der Pentosen im Harn.) A. Jolles.

109. Progress of Abdominal Surgery.—Moszkowicz concludes his review of the present status of abdominal surgery by appealing to general practitioners to diagnose high rectal cancers earlier. If in every case of rectal hemorrhage of obscure cause and negative findings with digital examination, the region was examined with the proctoscope it might be possible to detect high rectal cancers in an earlier stage. At present they are mostly in an inoperable phase when the surgeon first sees them. He urges the practitioner to call in a surgeon to aid in the diagnosis in every case of an obscure gastric or intestinal affection.

110. Idiosyncrasy to Cow's Milk in Infants.—Zybell has found on record 23 cases of an actual idiosyncrasy to cow's milk and adds 3 cases to the list from his personal experience. In one of Finkelstein's cases the resulting disturbances proved fatal, but in all the others the symptoms subsided on suspension of the cow's milk and feeding with small amounts of breast milk generally drawn and given to the infants with a spoon. The idiosyncrasy became manifest as the child, who had been fed at one time with cow's milk and then had been breast fed, was given cow's milk anew. In 5 cases, however, the idiosyncrasy was manifested at the first trial of cow's milk. This fact Zybell regards as sustaining the assumption that the idiosyncrasy is the result of some constitutional anomaly. This assumption is sustained further by the fact that several members of the same family or different generations may display the tendency. Even an hour or two after taking the cow's milk the temperature may run up to 104 F. and over; it may subside again as rapidly as it rose or it may persist for days at this height. In Finkelstein's fatal case the fever kept up for 9 days terminating at 106 F. Along with the fever the child looks collapsed, the skin is pale and cool or cyanotic, the respiration shallow and rapid, the whole impression being that the child is very ill. This extreme collapse suggests intoxication, but as a rule the threatening symptoms subside after a few hours. Gastrointestinal disturbances were noted in nearly every case and in 2 cases an eruption occurred during or directly after the milk feeding. The infants ranged from 9 to 42 weeks old. In weaning, only minute doses of cow's milk should be given at first to avoid being surprised by the discovery of an unsuspected idiosyncrasy to cow's milk, the manifestations of which may put the child's very life in jeopardy. The idiosyncrasy was finally conquered in all but one case by cautious administration of very small amounts of milk, the exception being a girl, now 15, who is still unable to take even the smallest amount of milk. In all the other cases the idiosyncrasy seemed to disappear as abruptly as it had developed, so that a few days later the children were taking rapidly increasing amounts of milk without the least inconvenience.

113. Treatment of Hemoptysis.—Blümel concludes his discussion of treatment of hemoptysis with the statement that salt is the most reliable means at our command for controlling hemoptysis. It overthrows the existing osmotic balance and fluids then pour from the tissues into the excessively salty blood, bringing with them the thrombokinase, the substance which promotes coagulation in the blood. It has been found that 10 minutes after ingestion of 10 gm. of salt by the mouth the coagulation time was reduced from 3¾ to 1½ minutes and to 1 minute after another 10 minutes. This hemostyptic action of sodium chlorid has been utilized by von den Velden in several hundred cases of inaccessible hemorrhage, hemoptysis, gastro-intestinal hemorrhage, etc., and the results were invariably equally good, as also in Blümel's and Reiche's experience. Blümel advises the physician called to a case of hemoptysis to insist on physical and psychic repose, the patient reclining in bed with the shoulders raised to promote expectoration. He must not be allowed to speak or to make any hasty movement and must remain in bed for several days after the sputum has ceased to show traces of blood. If the calm soothing words of the physician are not sufficient to tranquilize the patient, an ice bag should be applied to the heart or 30 grains of sodium or potassium bromid should be given. The ice bag helps to keep the patient still, if it does no other good, but it is not needed, of course, in every case. The application of adhesive plaster to immobilize the lung generally wearies and excites the patient unnecessarily. To check the cough if there is not much expectoration he gives about 3 grains of Dover's powder, if the patient is unable to control the cough himself, or some other sedative, repeating the dose at night, but never giving a sedative early in the morning as expectoration should be favored at this time. The temperature must be taken six times a day and the sputum collected to show to the physician. The food need not be changed if gas-generating and very cold substances are avoided. The room must be kept moderately cool and frequently aired. If the hemorrhage still persists when the physician arrives, he should give at once a heaping teaspoonful of salt in half a glass of water, and if the hemorrhage recurs or threatens, repeat the dose, alternating it with 45 grains of sodium or potassium bromid at intervals of 1½ or 3 hours, as required. If the hemorrhage is very profuse, the limbs may be ligated as an adjuvant—handkerchiefs answer the purpose but the constriction must not be too tight; the aim is to permit the arterial blood to flow into the limb. The greatest care must be exercised in undoing the ligature. If conditions are particularly threatening he advises an intravenous injection of 5 c.c. (81 minims) of a sterile 10 per cent. salt solution. A single dose of horse serum may be used also in these circumstances but it should not be repeated. The coagulating power of the blood may also be promoted, he adds, by a single subcutaneous injection of a sterile 10 per cent. solution of gelatin, repeated as needed. Ingestion of 5 gm. calcium lactate in 50 c.c. water, this dose repeated in 5 or 6 hours, may also be advised. If the patient is suffocating from clots in the throat they should be removed, artificial respiration applied or an emetic administered. Saline

infusion is contraindicated so long as the hemorrhage continues. The physician must never forget that the hemoptysis is merely a symptom and the cause must be sought. Blümel also adds a word of warning against the use of scopolamin and morphin as they have a paralyzing action on the reflexes so that suffocation is liable to ensue, to say nothing of the aspiration pneumonia that may follow.

Münchener medizinische Wochenschrift

July 19, LVII, No. 29, pp. 1529-1576

118 *Roentgen Rays in Treatment of Uterine Hemorrhage and Myomas. (Wie weit wird durch die Röntgenbehandlung unsere operative Therapie bei Uterusblutungen und Myomen beeinflusst?) B. Krönig.
119 Behavior in Human Body of Ehrlich's "606." (Verhalten des Ehrlich-Hataschen Präparates im menschlichen Körper.) P. Fischer and J. Hoppe.
120 Relations Between Potassium Iodid and the Scroreaction. (Welche Beziehungen bestehen zwischen Jod und dem Ausfall der Seroreaktion?) G. Stümpke.
121 *Study of Raynaud's Disease. H. v Hoesslin.
122 Plethysmographic Research During Physical Exercise. P. G. Geissler and Zybell.
123 Conservative Treatment of Anthrax on the Face. (Konservative Behandlung der Gesichtsfurunkel.) L. Wrede.
124 Traumatic Neuroses Following Railroad Accident. (Nervose Nachkrankheiten des Mülheimer Eisenbahnunglücks.) T. Becker.
125 The "Thread Reaction" in Diagnosis of Typhoid. (Die serodiagnostische Typhusreaktion von Mandelbaum.) A. Kesler.
126 Köhler's Bone Disease. (Die Köhlersche Knochenerkrankung.) K. Schäffer.
127 *Suprarenal Treatment of Osteomalacia. (Adrenalin und Osteomalazie.) Kownatzki.
128 Arrangement for Carrying Wounded in Railroad Cars. (Ein neues System zum Transport von Verwundeten auf den Eisenbahnen.) Waller.
129 Gonorrheal Corneal Ulcer. (Gonorrhoische Hornhautgeschwür.) C. Adam.

118. Roentgen Ray Treatment of Uterine Hemorrhage and Myoma.—Krönig and Gauss report 505 cases with operative treatment and 63 with treatment by the Roentgen rays and state that increasing experience is convincing them of the value of the latter in these gynecologic cases. Radiotherapy is definitely restricting the indications for operative treatment with myoma and hemorrhagic uterine trouble. It is especially indicated in cases of much debility, degeneration of the heart, obesity or bronchial catarrh. Operative treatment has still a mortality of from 4 to 6 per cent., which is altogether too high in the absence of vital indications. Excluding the above class of cases, radical treatment would have only 1 or 2 per cent. mortality, and this deserves the preference as a rule for the stronger patients because it is comparatively harmless for them and because the after-effects—if the ovaries are left—are decidedly less than with amenorrhea brought on by Roentgen-ray exposures. Necessity for rapid restoration of working capacity also compels operative treatment in many cases, so that radiotherapy will generally have to be reserved for well-to-do patients, but he who has beheld the brilliant effects of Roentgen-ray treatment in his own practice will certainly prefer it, they declare, in the suitable cases.

121. Raynaud's Disease.—In one of the two cases reported by von Hoesslin the vascular spasm involved, besides the extremities, the nose, chin and tongue. The trouble was ascribed to a severe chill which had been followed by rheumatic pains in the joints and swellings of the fingers and toes. The pains fluctuated in intensity and the tips of the fingers and toes varied from pallor to cyanosis. The involvement of the tongue permitted a number of interesting physiologic tests. In the second case the local symmetrical disturbances came on after an attack of influenza followed by a nodose arthritis; rheumatic pains were the first symptoms also in this case. The intense pallor in the face and hands first came on suddenly in consequence of fright from a lightning stroke near by.

127. Suprarenal Treatment of Osteomalacia.—Kownatski reports a case in which a young woman in the fourth month of pregnancy developed osteomalacia rebellious to the usual measures; there was a slight enlargement of the thyroid. Under a course of suprarenal treatment she gradually recovered and was normally delivered although one thigh was left a little shorter. The question now is to determine in which cases of osteomalacia suprarenal treatment is liable to prove efficient. It seems probable that the cases in which benefit may be anticipated are those in which the trouble is due to suprarenal rather than ovarian insufficiency. There are cases on record in which ovarian treatment proved successful and in certain experiments on animals thyroid treatment gave good results.

Therapeutische Monatshefte, Berlin

July, XXIV, No. 7, pp. 337-404

130 *Chronic Gastrosuccorrhea. F. Schilling.
131 *Treatment of Congenital Syphilis with Special Regard to the Wassermann Reaction. L. Halberstaedter and A. Reiche.
132 Treatment of Gonorrhea. (Zur Balsamtherapie der Blennorrhoe.) C. Cronquist.
133 Treatment of Alimentary Disturbances in Infants. (Zur Behandlung des Milchnährschadens.) F. Brandenberg.
134 Measures to Prevent the Spread of Venereal Disease in Austria. (Bekämpfung der Geschlechtskrankheiten in Oesterreich.) L. Sofer.
135 Pancreatic Dextrosuria. C. W. Scherk.
136 Historical Sketch of Adulteration of Certain Organic Remedies. (Historisches über die Fälschung einiger animalischer Heilmittel.) W. Fischer-Defoy.

130. Chronic Continuous Excessive Secretion of Gastric Juice.—Schilling lays great stress in treatment on dietetic measures to refrain from stimulating the secretion, especially by abstention from salt. The beneficial influence of a salt-poor diet on the discomfort from hyperchlorhydria has been recently emphasized by Enriquez and Ambard. Rest is an important aid also for patients with engrossing occupations and who are growing thin. Milk gruels, chocolate, butter, cream, oil, toast and zwieback are the main reliance at first in treatment, supplemented later with cheese and soft eggs; meat is entirely prohibited and no salt allowed except a little for the gruels. In the third week a little pea or bean soup is permitted; tender mashed vegetables aid in satisfying hunger. All sweets are to be avoided as also raw fruit and coarse vegetables, alcohol, tea, coffee and tobacco. The patients take a hot bath twice a week. By the second month a little boiled white meat and fish is allowed and by the third month boiled beef, macaroni and marmalade. Roast meats and raw fruit must still be avoided for weeks after this. If the improvement is only moderate on this diet he repeats the course of dieting again after a six-week's interval. It is important to have the patient rest for a time after the noonday meal, and a daily walk should be ordered for brain-workers. These and other measures to tone up the nervous system are supplemented by a mixture of equal parts of silver nitrate and belladonna extract, 0.15, 0.2 or 0.25 gm. in 150 gm. water, taking half a tablespoonful in half a wineglassful of water three times a day before eating. A bottle of this lasts a week, and the first week the mildest strength is taken, two bottles of the second strength follow, and then two or three bottles of the strongest mixture, then reducing the strengths progressively backward in the same way, the whole medicinal course thus requiring 8 to 9 weeks. After completion of the dietetic and medicinal course he sends the patient away for a brief change of air. Treatment along these lines has not been entirely successful in every case but the results have always been encouraging. The symptoms subsided and the patients slept and felt well. If there was retention from the preceding day along with the hypersecretion, he relieved the patients by lavage of the stomach at bedtime, allowing a tranquil night or the noeturnal pains might be relieved by eggs, chocolate and milk. The flow of gastric juice might be checked by 2 or 3 tablespoonfuls of melted butter or oil morning and evening.

131. Treatment of Inherited Syphilis.—Halberstaedter and Reiche relate their experiences with 43 children with inherited syphilis tested for the Wassermann reaction before and after each course of specific treatment. The children were in a special asylum and constantly under observation. The experiences with the Wassermann reaction were similar to those observed in the tertiary phase of syphilis in adults, the reaction persisting positive with great tenacity. A negative reaction frequently became positive again without apparent reason. The children given systematic specific treatment have thriven and developed well and are free from symptoms even although the Wassermann reaction continues positive.

Therapie der Gegenwart, Berlin

July, LI, No. 7, pp. 289-336

137 *Treatment of Diabetes in Children. M. Lauritzen.
138 *Tabetic Crises Consisting of Unconsciousness and Arrest of Respiration. (Krisenartig auftretende Bewusstlosigkeit mit Atemstillstand bei Tabes.) L. Jacobsohn.
139 Taste and Palatibility in Hygiene and in the Kitchen. (Geschmack und Schmackhaftigkeit in der Hygiene und in der Küche.) W. Sternberg.
140 *Treatment of Whooping Cough. (Zur Therapie des Keuchhustens.) G. Bradt.
141 Importance of Roentgen Rays in Gynecology. (Bedeutung der Röntgenstrahlen in der Gynäkologie.) M. Fraenkel.

137. **Diabetes in Children.**—Lauritzen reviews his experiences with 27 cases of diabetes mellitus in children; an inherited taint was evident in 7, but no indications of pancreatic disease or trauma affecting the brain were discoverable in any instance. Next in importance to the regulation of the diet, he declares, is the necessity for mental and physical rest, reducing tissue waste as much as possible; massage should be given while the child stays in bed, and for this and other reasons, he considers institutional treatment indispensable for diabetes in a child, even in the mild forms. The aim should be to relieve not only the organs in charge of sugar metabolism of all unnecessary work but also all the cells. He insists on the importance of recognizing an incipient tendency to diabetes in children and that the children in families inclined to metabolic disturbances, gout, etc., and children with acne, boils, eczema and other skin diseases should be supervised with special care in this respect, examining their urine frequently. If any reducing substances are found in the urine, a test meal of rice, fish, potato and bread should be given and the urine for the following four hours collected and analyzed. If the glycosuria increases, dietetic restrictions should be enforced at once. Only when the diabetes is detected in its earliest phase can material improvement or a cure be anticipated. Diabetes in children under 2 generally runs a rapidly fatal course. In the mild cases it is important not to jeopardize all with too early resumption of a mixed diet. In the mild and moderately severe cases the patients should return to the hospital four times a year for revision of the assimilating capacity and degree of production of diacetic acid and acetone and have the diet regulated anew accordingly. In the severe cases not until the urine has been made alkaline or is still only slightly acid under large prophylactic doses of sodium bicarbonate is it safe to inaugurate the strict antidiabetic diet. If the glycosuria persists he keeps the child in bed and occasionally allows nothing but water for a day. He accepts the beneficial and apparently specific action of oatmeal in diabetes and makes much use of it, but he always precedes the oatmeal days with a strict albumin-poor diet for a few days, then an exclusively vegetable day, then the oatmeal for a few days, then two or three vegetable days, and then the strict albumin-poor diet again, although in the severer cases the resumption of the stricter diet must be very cautious as otherwise the acidosis may suddenly increase and coma follow. He gives the tabulated details of several cases to show the great benefit that may be derived from treatment on these principles, generally following von Noorden's technic. Eight of the children are still living, including a girl of 8 with intense acidosis when first examined a year ago. The duration of the disease was from 2 months to 4 years in the others. He emphasizes the fact that the total acidity and ammonia content of the urine parallel each other and are a useful index of the daily fluctuations of the acidosis. He classifies the cases as mild when the sugar rapidly disappears on a diet poor in carbohydrates, and moderately severe when the sugar does not disappear unless the diet contains so little albumin that there is only from 7 to 13 gm. of nitrogen in the urine. The proportion of albumin allowed in the diet should be that with which the urine is kept free from sugar, and the amount of food should be kept down to what is actually required.

138. **The Sudden Appearance of Apnea with Unconsciousness in Tabes.**—Jacobsohn reports a case which he says is similar to those reported by Hoover in THE JOURNAL, July 20, 1907, page 237. In all the cases on record of this suddenly appearing apnea with a semicomatose state the patients had tabes, with a single exception, and in nearly every instance the attack followed administration of morphin or heroin as in his case. He accepts a temporary paralysis of the respiratory center as the cause of the trouble, and thinks that there is ground for incriminating the morphin as a factor in the process. Pal regards the phenomenon as similar in its nature to intermittent claudication. Jacobsohn's patient is a tabetic woman of 46 who has been under observation for a year and a half and several of these respiratory attacks have occurred in his presence; they seemed sometimes to take the place of gastroabdominal crises. In one attack a gastric crisis was followed at once by unconsciousness for 45 minutes, and during this time the respiration stopped ten times for from 60 to 80 seconds at a time. One day there were two attacks lasting 4 minutes each, followed the next day by unconsciousness for several hours with frequent pauses in breathing lasting from 2 to 4 minutes. The heart and pulse rate were not modified during the attack, the heart working powerfully as usual. As a rule cyanosis became evident about the end of the second minute; in another minute there was clonic twitching in the legs, then the respiration started up again full and deep and the patient regained consciousness.

140. **Treatment of Whooping Cough.**—Bradt ascribes the symptoms of whooping cough to a local process in the upper air passages, and declares that local treatment of the nasopharynx is frequently able to arrest the syndrome. He uses a mixture of iodin and phenol 0.5 parts, with 1.5 parts potassium iodid and 15 parts glycerin in 100 parts water; with this he swabs the nasopharynx for 2 or 3 seconds once a day. This local treatment is supplemented by keeping the child in out-door air as much as possible.

Wiener klinische Wochenschrift, Vienna

July 21, XXIII, No. 29, pp. 1065-1088

142 *Variations in Sugar Content of Cerebrospinal Fluid with Psychic Disturbances. (Schwankungen im Zuckergehalt des Liquor cerebrospinalis bei psychischen Erkrankungen.) L. Hess and O. Pötzl.
143 Vulvo-Vaginal Hematomas. J. Reich.
144 Influence of Alcohol on Syphilitic Serum in the Wassermann Reaction. (Einfluss des Alkohols auf luetische Sera bei der Komplementbindungsreaktion.) G. Satta and A. Donati.
145 Etiology of Psoriasis. J. Seibel.
146 The Newer Methods of Enrichment and Staining of the Tubercle Bacilli. (Einige neuere Methoden der Anreicherung und Färbung des Tuberkelbazillus.) H. Trunk.
147 *The Ronchese-Malfatti Test for Ammonia in Diabetic Urine. (Zur Beurteilung der Azidosis auf Grund eines einfachen Verfahrens der Ammoniakbestimmung im Harne der Diabetiker.) E. Marcovici.

142. **Sugar Content of the Cerebrospinal Fluid in the Insane.**—Hess and Pötzl report 16 cases of mental disease in which the proportion of sugar in the cerebrospinal fluid fluctuated within wide limits, sometimes in the same patient at different times. These fluctuations were noted in cases in which there was nothing to suggest an inflammatory process. The list included cases of dementia præcox and epilepsy.

147. **Test for Ammonia in the Urine as Index of Diabetic Acidosis.**—Marcovici gives the details of the simple Ronchese test based on the action of formalin on the ammonia salts. A 10 per cent. solution of sodium carbonate is added, a drop at a time, to the urine until the reaction becomes neutral. The formalin (40 per cent.) is neutralized with a one-fourth normal soda solution against phenolphthalein until a slight pink tint develops. Then 25 c.c. of the neutral urine and 10 c.c. of the neutral formalin are mixed and titrated against decinormal soda solution until a deep pink develops. The calculation is simple: 1 c.c. of the decinormal soda solution for 100 c.c. of urine corresponds to 0.017 gm. ammonia in 1,000 c.c. of urine.

Zentralblatt fur Chirurgie, Leipsic

July 24, XXXVII, No. 30, pp. 977-1008

148 *Spenglers I. K. in Surgical Tuberculosis. A. Exner and R. Lenk.

148. **Inefficiency of Spengler's I. K. in Surgical Tuberculosis.**—This communication from the university clinic at Vienna in charge of Hochenegg reports the application of I. K. in a number of cases of surgical tuberculosis with disappointing results. In 6 of the cases more than 6 months has elapsed since this treatment was commenced and the influence seemed to be rather deleterious. One woman with tuber-

culous peritonitis and enteritis, with slight fever, died from miliary tuberculosis 2 months after commencing the I. K. treatment. In a case of bilateral tuberculosis of the testicles and slight apical lesions, the lesions in the testicles seemed to show improvement under the I. K. at first, but the apical lesions progressed to florid phthisis and the patient succumbed 8 months after the beginning of the five-months course of treatment. In none of the other cases was any appreciable influence from the treatment discoverable and the use of I. K. has been abandoned.

Zentralblatt für Gynäkologie, Leipsic

July 16, XXXIV, No. 29, pp. 977-1008

149 Case of Mistaken Sex: External Masculine Pseudohermaphroditism. (Fall von Erreur de sexe.) W. Redlich.
150 Technic for Dilatation of Cervix with Laminaria. K. Czerwenka.

July 23, No. 30, pp. 1009-1040

151 *Acute Peritonitis Presumably Originating in the Genitalia. G. Pallin.
152 *Systematic Tampon Drainage of Small Pelvis in Prevention of Postoperative Peritonitis. E. Schürmann.

151. **Acute Peritonitis of Non-Puerperal Genital Origin.**—Pallin is convinced that it is more than a mere coincidence that only one patient was a man out of his 7 patients with peritonitis of obscure origin during the last 5 years. In 4 of the women the symptoms developed with a menstrual period and the fifth had not commenced menstruating again after a childbirth. Pathologic changes in the adnexa were evident in only 2 of the women; the appendix was apparently sound in all. Nötzel found a gynecologic origin in 43 out of 241 patients operated on for peritonitis, and Hagen has reported 3 fatalities in a group of 7 of gynecologic origin. He emphasizes the grave prognosis and the injurious influence of menstruation. From these and other data Pallin concludes that acute peritonitis may develop from the female genitalia alone, and that the infection may reach the peritoneum through the tube without causing inflammation on the way.

152. **Systematic Tamponing of Small Pelvis to Prevent Peritonitis.**—Schürmann declares that postoperative peritonitis is far too common and that more vigorous measures are needed against it. The main source of trouble, he is convinced, is the actual contact of the intestines with the oozing pus in the operative area. A small strip of gauze laid over the suture is pushed along by the intestines as they slide back into place after a laparotomy; this leaves the suture bare so that intestines and peritoneum rest against it and become infected. In order to prevent this he systematically packs the entire small pelvis full of gauze before lowering the pelvis after the operation. Then when the intestines slide down they rest on the gauze and are saved from infection. Any infectious process developing in the operative area remains localized here. In case the whole pelvis has been contaminated, he supplements this tamponing by tamponing through the abdominal incision, packing the pelvis with gauze so amply that the intestines are not able to slide down into the small pelvis at all. Ordinary drains are unable to convey all the secretions away; even with the best gauze drainage pus was found still clinging to the suture whenever he was obliged to open the abdomen again for any reason. It was formerly believed that the great absorbing power of the peritoneum was able to protect it against the spread of infection, but recent research has failed to disclose bacteria in the circulation, such as would be found if the peritoneum absorbed them as assumed. On the other hand, the lymphatics in the peritoneum have been found clogged with a copious cellular and fibrinous exudation, and this is now regarded as the natural defensive mechanism. This walling off is realized further by the adhesions induced by the mechanical irritation from the gauze tamponing, besides the direct protection afforded by the gauze itself. He does not use medicated gauze exclusively, on account of the danger of intoxication.

Gazzetta degli Ospedali e delle Cliniche, Milan

July 17, XXXI, No. 85, pp. 889-904

153 Presence and Determination of Tuberculous Sensitisers in Extracts of Human Scrofulous Glands. (Sensibilizzatrici tubercolari negli estratti di ghiandole linfatiche scrofolose umane.) S. Livierato.

Books Received

All books received are acknowledged in this column and such acknowledgment must be regarded as a sufficient return for the courtesy of the sender. A selection will be made for review in the interests of our readers and as space permits.

DIE HAUPTGRUNDGESETZE DER EPIDEMIOLOGISCHEN TYPHUS- UND CHOLERAFORSCHUNG, in Rücksicht auf die Pettenkofersche und die Kochsche Auffassung der Typhus- und Choleragenese. Auf Grund einer vergleichend-epidemiologischen Betrachtung einer grösseren Reihe von Typhus- und Choleraepidemien. Dargelegt von Dr. med. Friedrich Wolter in Hamburg. Jubiläumsschrift zum 50 jährigen Gedenken der Begründung der Lokalistischen Lehre Max von Pettenkofers, II. Band. Paper. Price, 24 marks. Pp. 337, with illustrations. Munich: J. F. Lehmann, 1910.

AN INTERNATIONAL SYSTEM OF OPHTHALMIC PRACTICE. Edited by Walter L. Pyle, M.D., Philadelphia, Member of the American Ophthalmological Society. Therapeutics. By Dr. A. Darier, Paris. Translated by Sidney Stephenson, F.R.C.S., London, Late Honorary Secretary of the Ophthalmological Society. Cloth. Price, $4 net. Pp. 444, with illustrations. Philadelphia: P. Blakiston's Son & Co., 1910.

LEHRBUCH DER KINDERHEILKUNDE FÜR ÄRZTE UND STUDIERENDE. Von Dr. med. Bernhard Bendix, Privatdocent für Kinderheilkunde. Dirigierender Arzt der Charlottenburger Säuglingsklinik. Sechste, Durchgesehene und Verbesserte Auflage. Paper. Price, 15 marks. Pp. 671, with 83 illustrations. Wien: Urban & Schwarzenberg, 1910.

A TEXT-BOOK OF PHARMACOLOGY AND THERAPEUTICS. Or the Action of Drugs in Health and Disease. By Arthur R. Cushny, M.D., Professor of Pharmacology in the University of London. Fifth Edition. Cloth. Price, $3.75 net. Pp. 744, with 61 illustrations. Philadelphia: Lea & Febiger, 1910.

TRANSACTIONS OF THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION. Vol. XXII. Twenty-second Session held at Hot Springs, Va., Dec 14, 15 and 16, 1909. Edited by W. D. Haggard, M.D., Secretary, Nashville, Tenn. Cloth. Pp. 561. Published by the Association, 1910.

VII. BERICHT DER DEUTSCHEN GESELLSCHAFT FÜR SAMARITER- UND RETTUNGSWESEN FÜR DIE JAHRE 1908 UND 1909. Herausgegeben vom Vorstand. Paper. Pp. 171. Leipzig: Nikolaikirchhof.

New Patents

Recent patents of interest to physicians:

952903. Charging vessels with carbonated liquid and flavoring-syrup under pressure. John Hicks, Summit, N. J.
953015. Herniai truss. Byron F. Lockwood, Jackson, Mich.
952957. Invalid bed. Walter B. Sterling, Wellsburg, W. Va.
952767. Apparatus for pasteurizing or cooling liquids. Magnus Thomsen, Davenport, Iowa.
952965. Apparatus for making, stamping, and cutting lozenges. John Trenor, Colne, England.
953073. Extracting caffein from coffee. Heinrich Trillich, Munich, Germany.
953074. Extracting caffein from whole coffee-beans. Heinrich Trillich, Munich, Germany.
953187. Producing a sulphur compound of quinia. F. W. S. Valentiner, Leipsig, Germany.
953901. Dipper for ice cream cones. Albert J. Daniel, Boone, Iowa.
953821. Artificial hand or tool-holding attachment for amputated arms. David W. Dorrance, Portland, Ore.
953945. Vacuum membrane-pump. Martin Falk, Cologne, Germany.
953687. Convertible bed. Michael D. Gavan, St. Louis.
954082. Invalid-bed. Michael D. Gavan, St. Louis.
954083. Massage apparatus. Richard H. Gay, Conesville, Iowa.
953691. Truss. George R. Harding, Utica, N. Y.
953954. Bed-pan. Amanda Jackson, St. Louis.
953962. Device for raising and moving invalids. Charles W. Lane, Fishkill, N. Y.
954398. Double acting syringe. Peter G. MacGregor, New York.
954320. Faucet for soda-fountains. William M. Megget, Greenville, Miss.
953922. Tracheal cannula or tube. John B. Rogers, York, Me.
954005. Orthopedic device. Louis Roth, New York.
954036. *X*-ray system. Homer C. Snook, Philadelphia.
954494. Drainage tube. George E. Andrews, Philadelphia.
954426. Disinfecting appliance. Max Dreifuss, Cleveland, Ohio.
955121. Apparatus for administering anesthetics. Charles A. Hollett, Indianapolis, Ind.
954519. Intravaginal infantile respirator. Walter E. Kelly, Belvidere, Neb.
954972. Foldable bath-hopper. Burton D. Knickerbocker, Chicago.
954760. Ambulance. Walter von Oettingen, Wilmersdorf, Berlin, Germany.
954474. Confinement chair. Emil C. Schortmann, Bilboa, Spain.
955006. Abdominal retractor. Joseph E. Sparks, Crossett, Ark.
955312. Medicine cabinet. Constantine Belfi, Philadelphia.
955454. Condenser and mold for carbon dioxid. William J. Flemming, Richmond Hill, N. Y.
955818. Ozonizer. Anthony Lohman, Philadelphia.
955339. Massage device. John C. Lumsden, New York.
955821. Anesthesia mask. Victor F. Marshall, Appleton, Wis.
955342. Pendent sprayer support. Walter H. Maxwell, Cincinnati.
955481. Pasteurizer. Charles Skidd, Kenosha, Wis.